NOVEMBER 1, 1954

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

CONSTRUCTION

It's pumping a record $36.5 billion into the economy this year. And building promises to be the major business mainstay in 1955, too, p. 39

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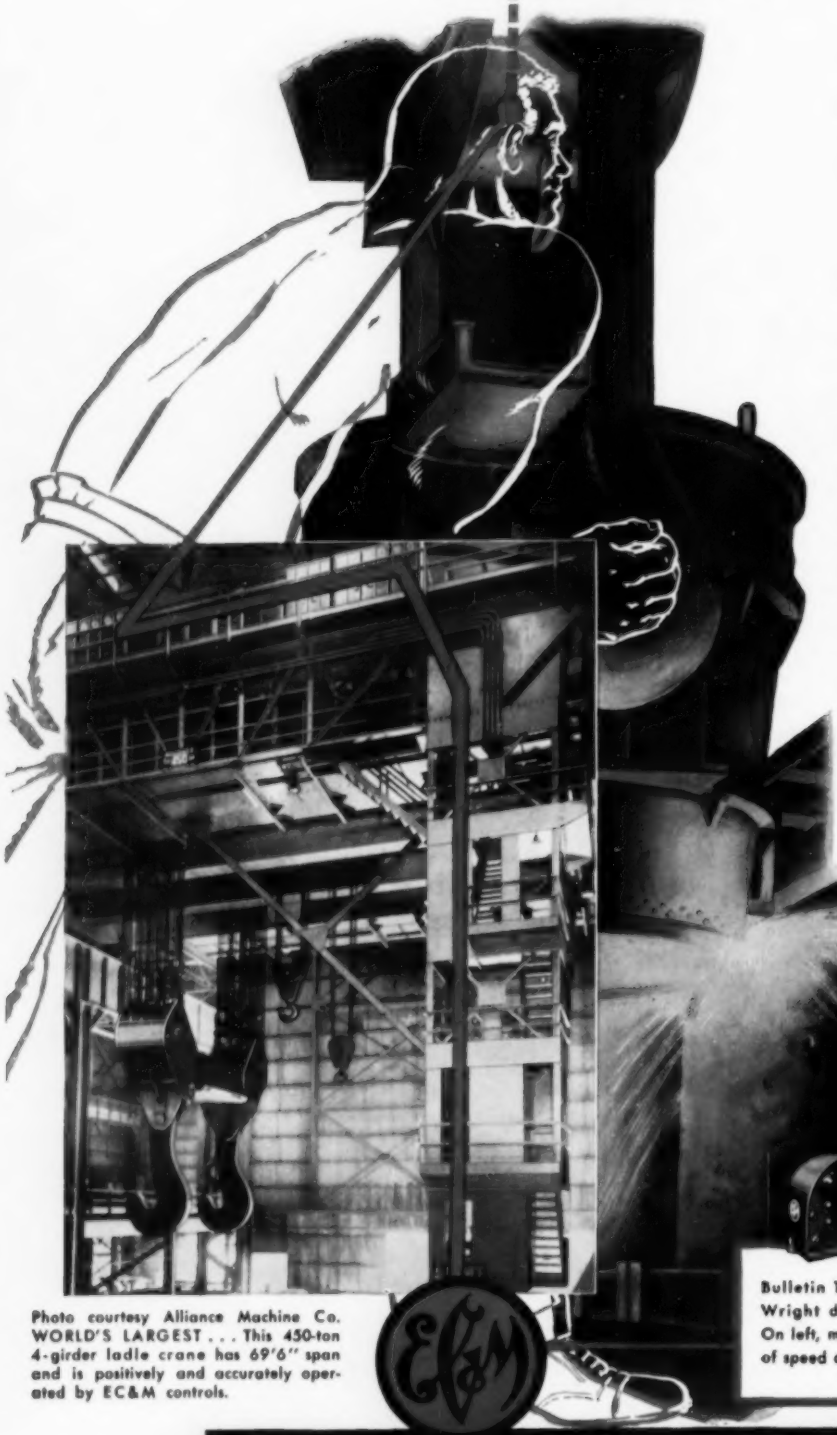
nerve center for a giant



WORLD'S LARGEST LADLE CRANE OPERATED BY EC & M CONTROL

Ask the men who operate the "big ones"... they'll tell you that they prefer EC&M Control because of easy and simplified operation. They know from experience that these tried, tested and proven crane controllers have the highest reputation for reliability.

You don't have to have the world's largest Ladle Crane to utilize the advantages of the EC&M Wright Circuit hoist controller. Here is a unit that guarantees the operator complete control from the master switch of all loads in the lowering direction... applies down-power quickly through fast operating LINE-ARC Contactors for instantaneous brake release, making it easy to spot heavy loads... on cranes of any size.

Key to EC&M superiority in safety, efficiency and economy is simplicity ... simplicity reduces need for maintenance, assures complete understanding, encourages regular inspection and promotes safer operation.

Photo courtesy Alliance Machine Co. WORLD'S LARGEST . . . This 450-ton 4-girder ladle crane has 69'6" span and is positively and accurately operated by EC&M controls.

Bulletin 1190 Cam type master switch and Wright dynamic lowering circuit controller. On left, master switch provides up to 6 points of speed control.

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET CLEVELAND 4, OHIO

1770

A billion wood screws sold every 49 days

That's right! In 1953 sales of wood screws in this country totalled nearly 7½ billion, according to the U.S. Wood Screw Service Bureau.

Many leading manufacturers of wood screws and other fasteners rely largely on Bethlehem wire of cold-heading quality, which we furnish them in several different analyses and heat-treatments, depending upon the size, type of head, and kind of screw.

Screw wire is just one of many specialties that we produce regularly in our modern wire mills. Each kind of Bethlehem wire has the right strength, ductility, finish, and other properties required to give best results for a particular application. Tire-bead wire, for example. And wire for upholstery springs, for steel wool, brush handles, bicycle spokes and lock washers.

The steel wire that's best for your product is likely to be a grade and quality that we're producing right now. At your invitation we would be glad to have a Bethlehem man talk over your needs and give you full information.

Perhaps he could help you solve a wire problem right now. Just phone the nearest Bethlehem sales office, or drop a line to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Bethlehem **COLD-HEADING WIRE**

BETHLEHEM STEEL

now even better

SKF Triple-Seal "SAF" PILLOW BLOCKS

BETTER Because SKF's Type "C" Spherical Roller Bearings . . .

increase capacity 25% to 50%

increase service life 2 to 3½ times

Designers throughout industry have heard the news from SKF—news about the SKF Type "C" Spherical Roller Bearing which, size for size, gives up to 50% increased capacity, 2 to 3½ times longer life!

Now there's more SKF news:

You can now get the famous SKF Triple-Seal "SAF" Pillow Block *equipped with the Type "C" Spherical Roller Bearing!*

This *in addition* to effective sealing from dirt.

This *in addition* to lubricant retention.

This *in addition* to adapter mounting for tight fits on standard shafting; "Free" or "Held" design.

This *in addition* to easy installation and inspection.

This *in addition* to bearings that self-align.

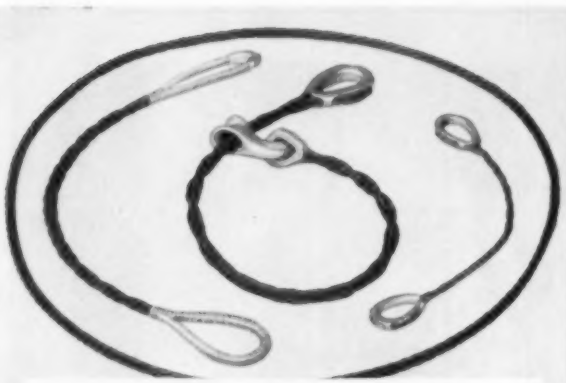
This *in addition* to greatly *increased bearing capacity and life.*

No other available bearing design gives you the capacity and life of the SKF Type "C" Spherical. Plan on it as part of your design, wherever you need a heavy-duty Pillow Block.

Any SKF District Office will help you. **SKF INDUSTRIES, INC.,** PHILADELPHIA 32, PA. — *manufacturers of* **SKF** *and* HESS-BRIGHT *bearings.* 7922

Send for SKF Bulletin No. 365-A—which gives complete facts—sizes available—increased life you can expect for each size.

SKF®
BEARINGS AND PILLOW BLOCKS



Braided Wire Rope Slings

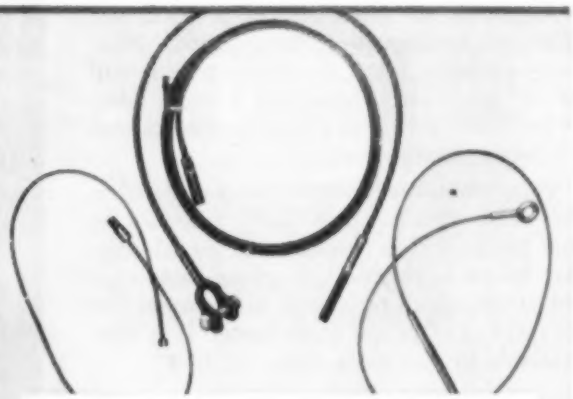
Materials handling—from unloading a car of pipe to handling a 200-ton generator—requires a wide variety of safe, economical, easy-to-handle slings. The sizes and types of Macwhyte Slings are practically unlimited—they are available in many standard designs or can be custom-made. Bulletin lists and illustrates many types and body styles in Round-Braided, Flat-Braided and Single-Part Slings. *Specify Bulletin 5308.*

The proper choice from this wide variety of wire rope products means —

LONGER and SAFER SERVICE

Wire Rope

Proper selection of wire rope is most important in getting safe, economical operation. To provide the right ropes for each of the many kinds of equipment, Macwhyte Company makes a thousand and one types and sizes. Included are PREformed Internally Lubricated Ropes, Galvanized Ropes, Stainless Steel, and Monel Metal Ropes. *Request Catalog G-16.*



Wire Rope Assemblies

Safe-Lock Wire Rope Assemblies provide a unit of wire rope with permanently attached fittings made to specified size, length, and strength needed. A wide selection of fittings and wire rope are made for use on small gasoline powered equipment; outboard motors; mining and excavating machines; agricultural implements; automotive, aircraft, marine, and laboratory equipment. *Ask for Catalog 5201.*

Recommendations for the correct wire rope product for your needs will be gladly furnished.

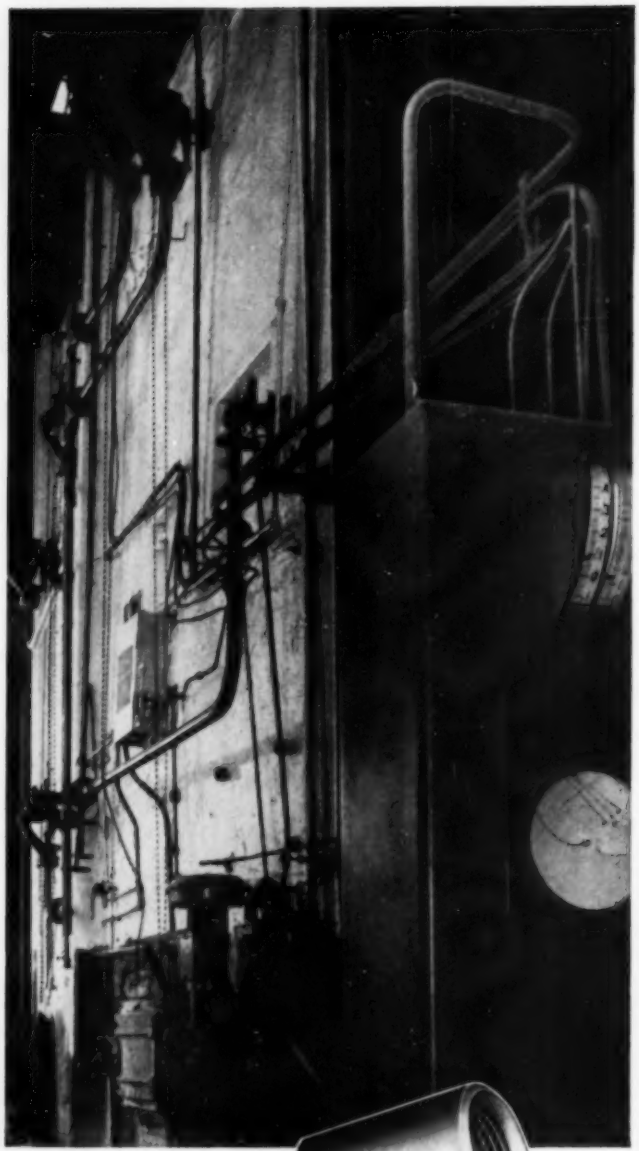
MACWHYTE

MACWHYTE COMPANY
2912 Fourteenth Avenue
Kenosha, Wisconsin

Manufacturers of Internally Lubricated PRE-formed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Galvanized, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies.

Mill Depots:
New York • Pittsburgh • Chicago
St. Paul • Ft. Worth • Portland
Seattle • San Francisco • Los Angeles

This YOLOY pipe has lasted 6 times longer

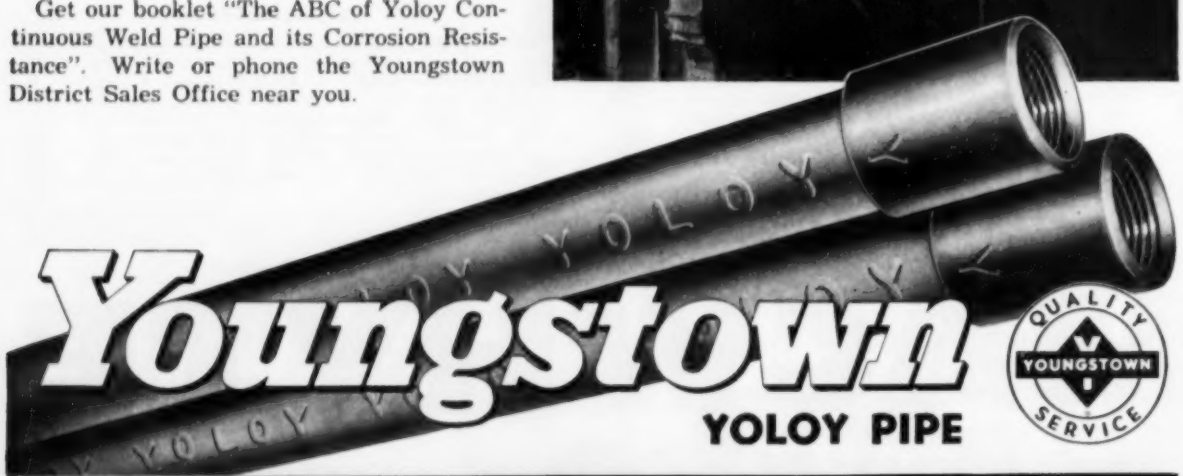


The pipe shown in the photograph of this large boiler carries steam for the "soot" and "fly ash" blower system in an Ohio electric plant. The service is so severe that regular carbon steel pipe had to be replaced as often as 60 days.

A solution for this corrosion problem was obtained by installing Yoloy pipe. Now, twelve months later, the Yoloy pipe is still in service—hasn't developed a single leak. It has lasted six times longer, and looks good for many months more.

Yoloy Continuous Weld Pipe is made from the same nickel-copper steel composition that has proved so successful in the oil, mining, railroad, chemical, trucking and other industries where resistance to corrosion and abrasion is of prime importance. It is now available in pipe sizes, from ½" to 4".

Get our booklet "The ABC of Yoloy Continuous Weld Pipe and its Corrosion Resistance". Write or phone the Youngstown District Sales Office near you.



Youngstown

YOLOY PIPE

QUALITY YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - District Sales Offices in Principal Cities

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

Vol. 135 No. 18 November 1, 1954

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Do a Better Job Faster...

METALWASH Phosphatizing Machine at the AUTOCAR DIVISION of the WHITE MOTOR CO.

METALWASH Phosphatizing Machine provides superior pre-paint surface at PROVEN COST SAVINGS

METALWASH-designed Phosphatizing Machines are available for every application from the simple *phosphate-cleaner* to the multi-stage *wash, rinse, phosphate coat, rinse, acid rinse,* and *dry* machines.

"*. . . with our* **METALWASH** *Phosphatizing Machine we have achieved substantial product improvement and considerable cost saving, together with elimination of paint failures in the field,*" states Robert Hood, Supervisor of Mfg. Research of the Autocar Division of the White Motor Co.

METALWASH SPRAY PICKLING MACHINE is a *production method* in preparation for *enameling, plating, phosphating;* in removal of annealing scale after heat treatment.

METALWASH PARTS WASHERS, designed for *alkaline-, neutral emulsion-,* or *solvent-type cleaners,* are manufactured in *five basic types.*

METALWASH VAPOR DEGREASERS *provide new speed, economy, durability.*

METALWASH®
WASHING PICKLING DRYING
PHOSPHATIZING DEGREASING

METALWASH MACHINERY CORPORATION
917 North Avenue, Elizabeth 4, N. J.

Threaded Specialties

lower cost
TEE BOLTS
by an
exclusive method

Among Pawtucket's many specialty products are these lower-cost tee-head bolts. Pawtucket's exclusive production method keeps cost low, dimensional accuracy unusually high and strength above standard.
Pawtucket tee head bolts are made in standard sizes ¼" and larger, or to your specifications. In any size, you can depend on a uniform Class 3 fit, if required.

All standard steels, stainless steels and non-ferrous metals, including Titanium

BETTER BOLTS SINCE 1882

PAWTUCKET
MANUFACTURING COMPANY
327 Pine St. • Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.
"The Bolt Man"

behind the scenes

Let's Thank Construction

The building blocks on this week's cover suggest construction, and construction is the hottest thing in the business world these days. The high rate of building activity during 1954 was the main reason why the metalworking industry didn't sag, in spite of the fact that a great many tried and true analysts came right out and predicted a metalworking slump. When STEEL's editors began to assemble their story on construction they ran into many surprises, one of the biggest being the news that when 1954 is over, construction put in place will total an all-time record of $38 billion.

Thirty eight billion dollars! Maybe some of you business mathematicians can figure out the height of a stack of that many silver dollars. At the moment we don't know how far such a stack would reach, but from the story we learned something more important: next year will see a continuation of the building boom; housing starts will exceed 1 million; schools, hospitals and commercial structures are being let at a steadily increasing rate; highway construction will expand.

These juicy chunks of business will largely offset the anticipated declines in industrial and military construction. Indeed, if you read the story while your natural optimism is still high, you will very likely agree with the editors that construction will be the 1955 industrial bellwether.

That New Market Section

Assistant Managing Editor Vance Bell has a particularly warm spot in his heart for the Market Section in STEEL, mostly on account of dressing it up is part of his job. After you leave here and go back through the Market Section you will find some interesting and pleasant improvements in the presentation of market information. Vance now uses color, illustrations and cartoons, the cosmetics of business journalism. Beyond that, he usually leads off with an original market story.

The story that appears in this issue stemmed from a clue that caught Vance's quick attention. It concerned the warehousing of aluminum and magnesium on consignment, and almost before the metal was cool, Vance was on the track of a story. Stocking light metals on consignment, you know, went out of fashion at the outset of the Depression; resumption of the practice meant news—and a good lead story for the Market Section.

Fxzsjqv Makers Cheered

This issue also carries STEEL's quarterly survey of the inventory situation. Four times a year the editors sample a faithful cross-section of the metalworking industry and assemble their findings in a very interesting and remarkably accurate report. For many of our readers, this report has a terrific direct value. Suppose you manufacture case-hardened fxzsjqvs for use on kighms, and you are trying to schedule next year's production. Wouldn't it be instructive to know how many kighm plants had how many fxzsjqvs on hand?

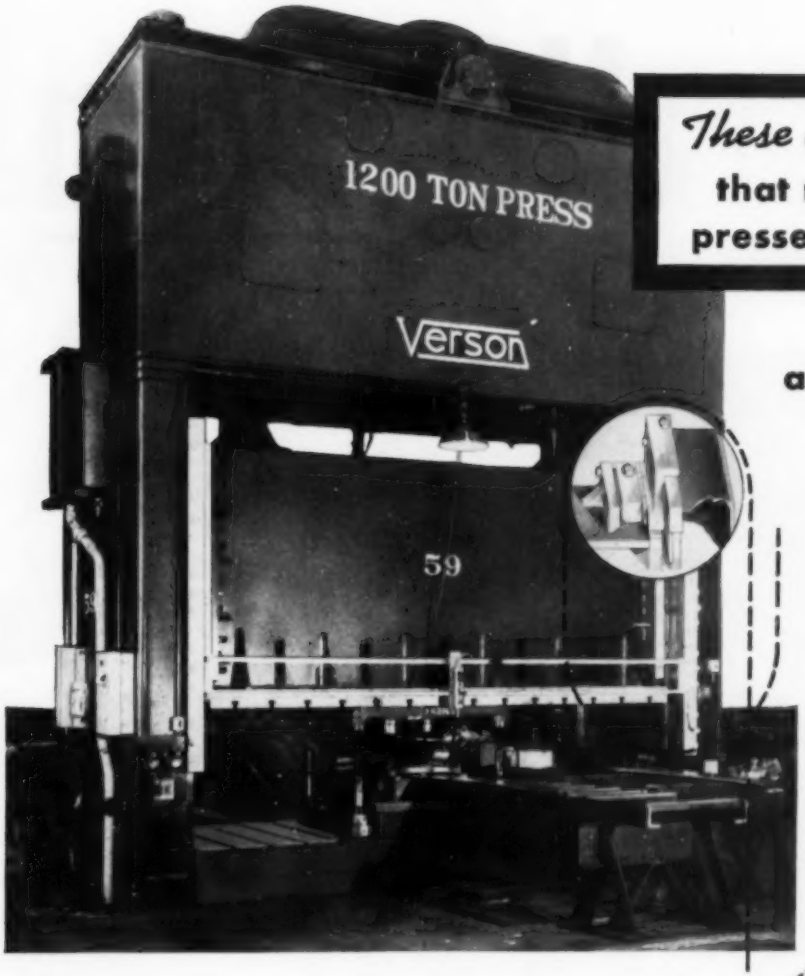
Seriously, the inventory situation is an excellent indication and guide, and STEEL's quarterly reports on this subject are widely read.

Appearance Brings Maturity

At a recent Art Directors' Show here in Cleveland we were deeply impressed by the range and quality of art employed in contemporary advertising, particularly industrial advertising. Many of the ads that appeared in STEEL held places of honor on the walls of the exhibition hall. It occurred to us that after the business press began to watch its appearance, it matured in a hurry, rapidly attaining respect, dignity and responsibility. Capable and reasonable persons guard its reputation at all times; they see to it that nothing objectionable, tawdry, offensive, dull or inconsistent creeps into its pages. Safeguards in the form of good judgment and established policy keep advertising copy in line. Even if the space it fills is for sale, it is amazing to consider the minute fraction of advertising that is rejected by the business press on the grounds of being objectionable.

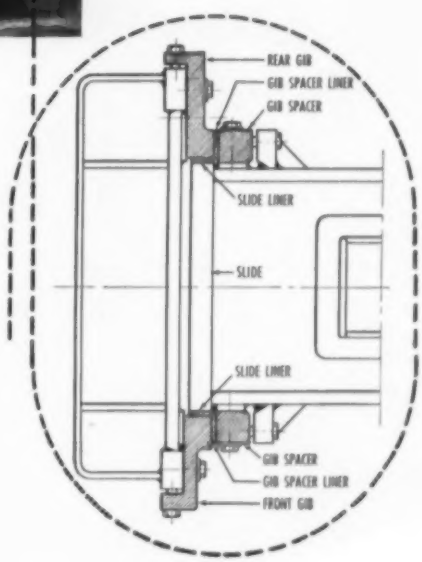
Shrdlu

(Metalworking Outlook—Page 310



These are the features that make "Verson" presses your best buy

Extra long, adjustable, square gibbing of "Verson" Presses assures accuracy and long press and tool life



Quality has to be designed and built into a press—it can't get there by accident. A good example is the gibbing of Verson presses. It is extra long to provide accurate guidance of the slide right to left and front to back throughout the stroke. It is adjustable in both directions to make it possible to maintain precise accuracy at all times. To assure peak efficiency at all times, gib bearing surfaces are ground to a mirror finish.

For the user, the design of Verson gibbing means better press performance and longer life for both press and tooling. It all adds up to better stampings at lower overall cost.

Put this advantage and Verson's many other advantages to work in your plant. Whether you require a single press or an entire stamping plant, complete with tooling, we'll be pleased to make recommendations.

A Verson Press for every job from 60 tons up.

"Verson" trade mark

ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

VERSON ALLSTEEL PRESS CO.

9318 S. KENWOOD AVENUE, CHICAGO 19, ILLINOIS • SO. LAMAR AT LEDBETTER DRIVE, DALLAS, TEXAS

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING • DIE CUSHIONS • VERSON-WHEELON HYDRAULIC PRESSES

NO down

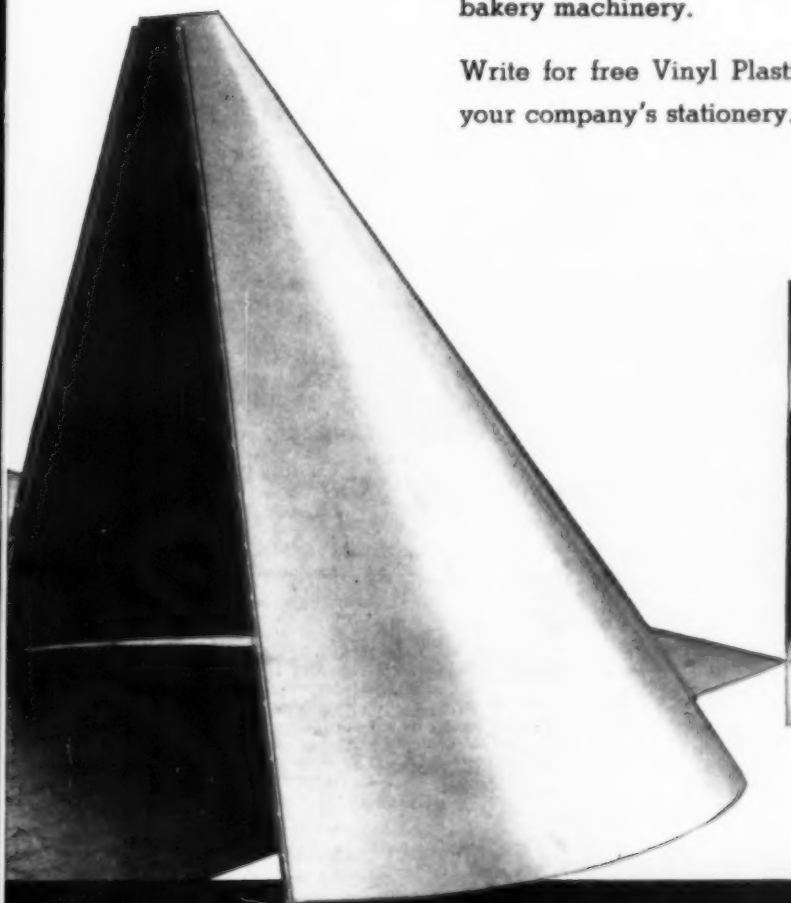
Photos courtesy Century Machine Company, 4434 Marburg Avenue, Cincinnati 9, Ohio

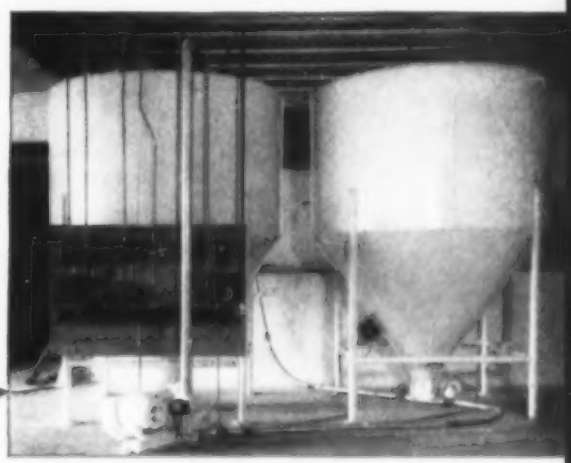
time in 16 years...

The records of the Century Machine Company show "no down time in sixteen years use" on this Cincinnati Press Brake.

This machine, working a 9½ hour day, forms light gauge sheets in mild and stainless steel up to ¼" thickness. It is constantly producing accurate parts for easy assembly of Century's baking ovens and bakery machinery.

Write for free Vinyl Plastic Tonnage chart TC-3 on your company's stationery.





● Flour Storage Bins—each 1000 lbs. capacity

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

CINCINNATI

FIRE!

PUT IT OUT IN SECONDS
with a Kidde Portable extinguisher

Unless you get the jump on fire the minute it starts, you stand a good chance of kissing your business good-bye.

That's why it's so important to have a Kidde portable extinguisher near *every* fire hazard in your plant.

Protect motors, electrical equipment, flammable liquids and machinery with Kidde portables. Then, when fire strikes, you're ready for it.

Just grab a Kidde CO_2 or dry chemical portable, aim the horn, pull the trigger, and—Whoosh! No more fire!

Your *next* fire could be your *last* . . . Contact Kidde today!

The words 'Kidde', 'Lux', 'Lux-O-Matic', 'Fyre-Freez' and the Kidde seal are trademarks of Walter Kidde & Company, Inc.

Kidde

Walter Kidde & Company, Inc.
1160 Main Street, Belleville 9, N.J.

Walter Kidde & Company of Canada, Ltd., Montreal—Toronto

LETTERS
TO THE EDITORS

Nothing But Distorted Facts

We're interested in obtaining a copy of the "1954 Democratic Fact Book" covered in your "Windows of Washington" column of Oct. 4 on p. 58 (The "Fact Book" . . . is one of the most distorted documents to come down the pike in a long time).

W. J. McDonnell
United States Defense Corp.
St. Louis

• You can get up to 50 copies free by writing the Democratic National Committee, 1001 Connecticut Ave. N. W., Washington. For larger quantities the price is 10 cents a copy.—ED.

Ups Concept of Foremen

We found the article, "The Foreman —Make Them Managers," No. 9 in STEEL's 1954 Program for Management, on p. 103 of the Oct. 11 issue, of great interest. We would appreciate having 100 copies of this article (. . . to the employee, the foreman is the company. If he's going to function effectively, he must be a member of the management team).

W. J. Allaback
plant manager
Thew Shovel Co.
Lorain, O.

. . . can you please mail 15 tear sheets to the attention of the writer?

R. E. Grimley
Standard Coil Products Co. Inc.
Chicago

. . . we are engaged in a Management Understanding Program along the lines of your foremen article with our management supervisors, and, if possible, we would appreciate receiving 80 tear sheets of the article. Also please send a tear sheet of each of the other nine parts of STEEL's 1954 Program for Management.

Alexander Breckenridge
Michigan Division
Revere Copper & Brass Inc.
Detroit

Looking for AISI

Upon occasion, STEEL quotes statistics on steel production and gives as the source the American Iron & Steel Institute. We have tried to locate the institute to obtain more information on

(Please turn to page 12)

Sciaky Three-Phase Welder at Buckeye Div. of Mardigian Corp. of Wooster, Ohio.

PRODUCTION JUMPS 375%...

Costs Cut Sharply with Sciaky Patented Three-Phase Welders

FACTS ABOUT SCIAKY PATENTED THREE-PHASE

	SINGLE-PHASE	SCIAKY THREE-PHASE	SAVINGS
TRANSFORMER RATING	250 KVA	100 KVA	150 KVA
WELDING KVA DEMAND	650 KVA	325 KVA	325 KVA
LINE AMPS PER CONDUCTOR 440 V.	1,476 A.	430 A.	1,046 A.
POWER FACTOR	30%	85%	Greatly Improved
INSTALLATION COST—EST.	$10,500	$5,250	$5,250

Buckeye, with an enviable 52 year record of manufacturing, uses Sciaky patented Three-Phase Balanced Load, High Power Factor resistance welders extensively in fabricating high quality aluminum kitchenware.

Standard Sciaky Three-Phase Welders increased production 375% over riveting in joining a variety of handle mounting brackets to different size pans. Even beyond the savings in costs of rivets and related tooling, Sciaky Balanced Load Three-Phase with 85% power factor (compared to 30% for conventional single phase) and a 50% reduction in power demand, is far less expensive to operate than conventional single phase *unbalanced load* welders. Sciaky Three-Phase readily solves power problems, and further, installation costs are estimated at only half of single phase installation cost.

Write today for "Resistance Welding at Work", Vol. 4 - No. 2. Read the complete details of Buckeye's impressive application of Sciaky basic thinking—welders designed to do *more useful work* at *lowest operating cost* with *maximum reliability.*

Largest Manufacturers of Electric Resistance Welding Machines in the World

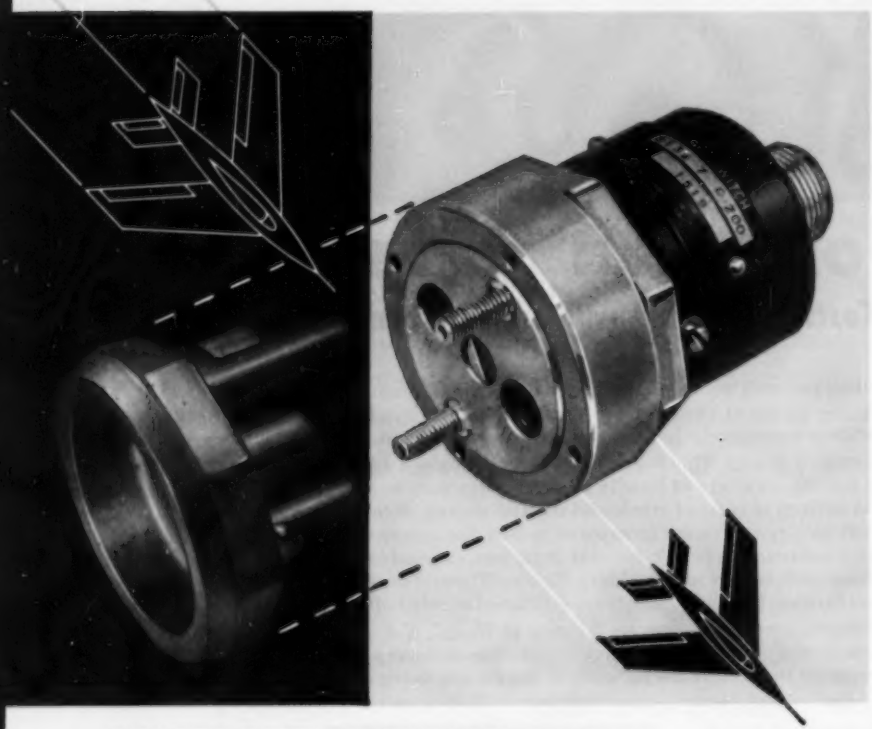
SCIAKY

Sciaky Bros., 4909 West 67th Street, Chicago 38, Illinois

MUELLER BRASS CO.
forgings help insure dependable operation of aircraft pressure warning instruments

A specially designed housing, accurately forged to customer specifications by Mueller Brass Co., seals in the diaphragm of the pressure warning unit manufactured by Eclipse-Pioneer Division of Bendix Aviation Corporation in Teterboro, New Jersey. The unit, designed for installation in fuel, oil, water or alcohol lines of modern aircraft is a highly sensitive instrument that instantly warns the pilot or flight engineer of any unusually high or low fluid pressures.

All Mueller Brass Co. forgings have a dense, close-grained structure with a high tensile strength. Weight savings up to 40% are possible in the design of parts because of the close tolerances to which they can be produced. Less scrap and longer tool life result from the easy machinability of forged parts. Mueller Brass Co. is completely equipped to design parts for your products, specify alloys (including special alloys developed by our metallurgists), forge, machine, finish and plate the parts and perform all necessary assembly operations. Write today for our free illustrated 32-page forgings catalog and complete information about MBCo forged parts for your products.



MUELLER BRASS CO.
PORT HURON 19, MICHIGAN

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LETTERS

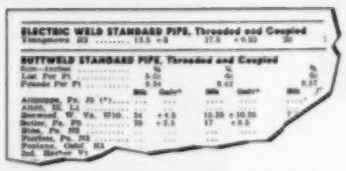
(Concluded from page 10)

steel production for sales analysis purposes. However, we have been unsuccessful. Will you give me this institute's address?

C. R. Myer
manager
Abrasives Division
Elgin National Watch Co.
Elgin, Ill.

• *Address of the American Iron & Steel Institute is 350 Fifth Ave., New York 1.—ED.*

Report on Pipe Prices



ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

BUTTWELD STANDARD PIPE, Threaded and Coupled

We are enclosing a page of prices on standard pipe which appears regularly in STEEL. We would appreciate a full explanation on how this price list should be interpreted.

Kenneth M. Nash
East Mill Street
Pittsfield, Mass.

• *We're happy to explain our method of publishing discounts on standard pipe. The listings (they appear on p. 148 of the Oct. 18 issue) specify discounts for carloads (40,000 lb in your section of the country) from list price for black and galvanized pipe in random lengths, f.o.b., producing mill. The discounts are listed for stated sizes (in inches) together with respective base prices (in cents per foot) and weight (in pounds per foot). Names of producers quoting the discounts are identified by symbols, the key to which is published in an accompanying table . . . For example take 23,809.5 feet of 1-in. black buttweld standard pipe, threaded and coupled. At 1.68 lb per foot (as listed), this quantity of pipe would weigh about 40,000 lb. At 17 cents per foot (as listed), this quantity would carry a list price of about $6800. The discount at the Youngstown mill of Republic Steel Corp. on this size and type of pipe is 29.25 per cent (also listed). Multiplying $6800 by 29.25 per cent gives a discount of $1989. So the net price for this pipe is $4811 at the mill, subject to published extras and deductions.—ED.*

Close Look at Auto Costs

We noted with interest your two-part article on figuring company-owned auto expenses (As many companies plan to put more salesmen on the road, the basic economics of business car expense are getting a close look . . .) which appears on p. 67 of the Oct. 11 issue and p. 60 of the Oct. 18 issue. May we receive tear sheets of both parts . . .

L. S. Cawrse
president
Consolidated Iron-Steel Mfg. Co.
Cleveland

Please send me two tear sheets of each installment . . .

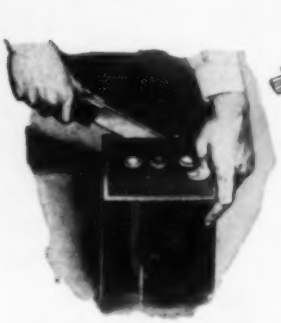
E. E. Pursch
Cost Estimating Department
R-B-M Division
Essex Wire Corp.
Logansport, Ind.

BATTERY MAINTENANCE TIP #2

from the GOULD Plus-Performance Plan

BEST WAY TO REMOVE ELEMENT FROM JAR

When accidental damage requires installing an element in a new jar, the element complete with cover must be removed. The Gould Plus-Performance Plan shows you how this can be accomplished easily and with safety.



1. *Cut Bond Between Cover and Jar*

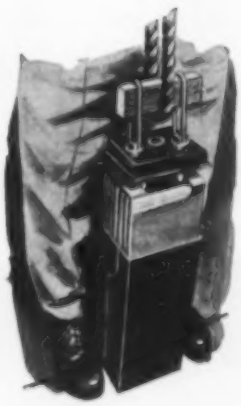
Cut the compound from around the top of jar, using warm compound knife, keeping it very close to inside of jar wall.

2. *Heat Outside of Jar Before Pulling*

To make sure there is no hardened compound to restrain the pulling of the element, heat the outside top of all four sides of the jar with a blow torch. Warm thoroughly, but do not melt or burn the jar.

3. *Pull Element from Jar*

Using Gould Jar Hold Down Clips (Part No. 2-1445) and Gould Cell Puller (Part No. 77061) as shown here, lift element halfway out of jar. Allow element to drain for minute or two, then remove and place immediately in new jar or lay it on flat insulated surface such as wood, for servicing.



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Here is one more example of how the Gould Plus-Performance Plan can help you save money by performing many service operations in your own shop. For the complete Plan, mail the coupon TODAY.

BATTERY INFORMATION HEADQUARTERS
Dept. S-114 Trenton 7, N. J.

Please send me, without charge or obligation, the Gould Plus-Performance Plan for _____ batteries.
(type or types)

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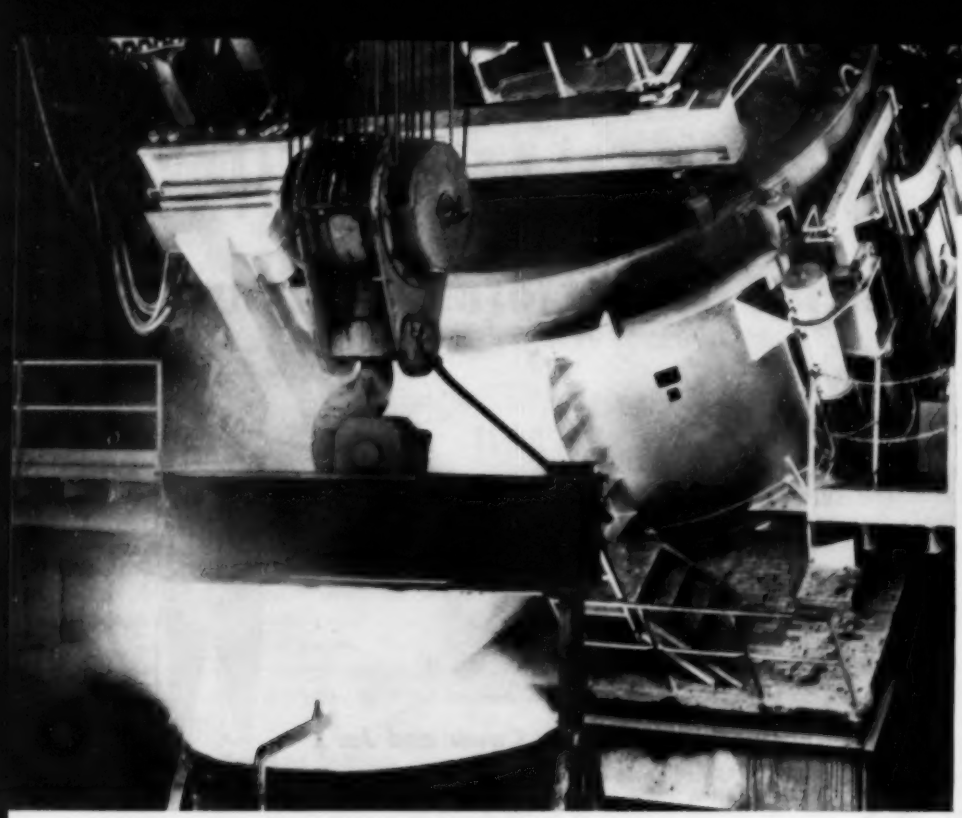
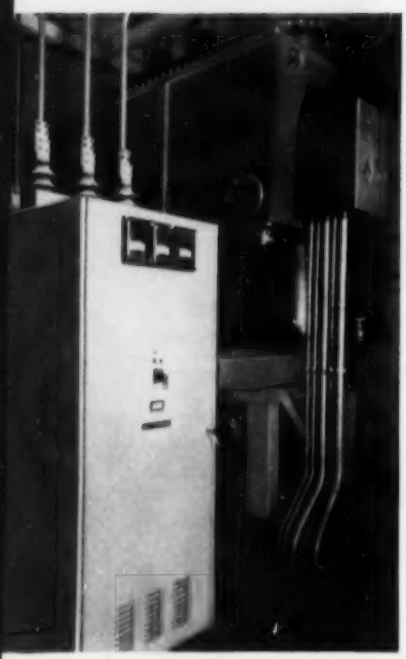
City _____ Zone _____ State _____



General Electric amplidyne control, metal-clad switchgear and furnace transformers provide completely co-ordinated electric equipment for arc furnaces.

General Electric Regulators Provide Unexcelled Arc Furnace Performance



General Electric metal-clad switchgear is designed for the rugged duty of arc furnace switching.

AMPLIDYNE ELECTRODE REGULATION OFFERS THESE ADVANTAGES...

- **100% electrode speed for small changes in arc current.**
- **Independent phase control eliminates unnecessary electrode movement.**
- **Maximum operating economy.**
- **Simplified design assures minimum maintenance, long equipment life.**

General Electric amplidyne regulators for electric arc furnaces offer faster electrode regulation for all the voltages and arc current settings.

This is made possible because even a small change in arc current will immediately start the electrode correction at 100% speed. As the electrode approaches the correct position, its speed gradually decreases to zero thereby avoiding "overshooting" and hunting. This rapid correction reduces electrode consumption, producing a higher average power factor and a lower KWHR per ton produced.

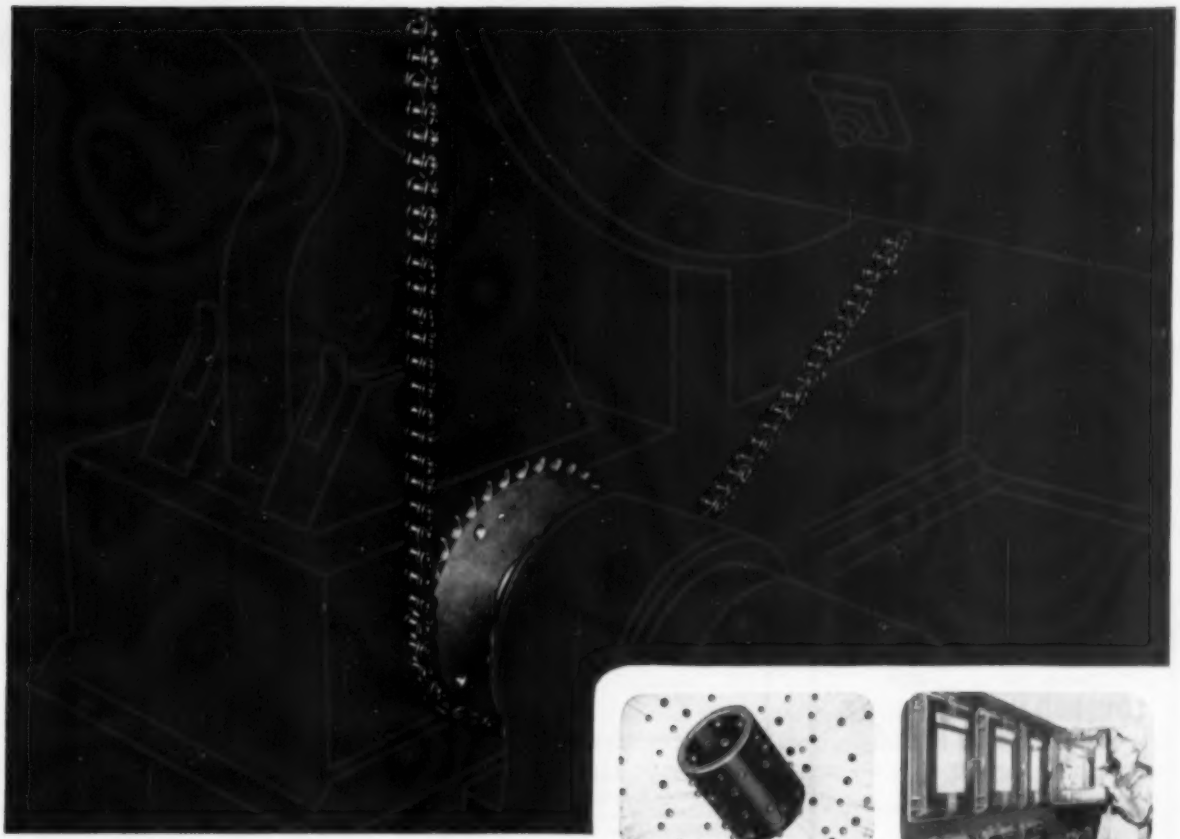
A steadier heat is obtained because independent phase control eliminates unnecessary electrode movement. Maintenance is reduced because G-E amplidyne regulators operate by direct transfer from the control switch with no interposing relays for manual or automatic operation.

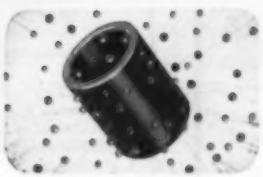
For more information about General Electric control for arc furnaces, see your G-E sales representative or write to General Electric Company, Schenectady 5, N. Y. 511-7

Progress Is Our Most Important Product

GENERAL ELECTRIC

How these EXTRAS* make roller chain last longer





SHOT-PEENED ROLLERS have greater fatigue life, added ability to withstand impact.

CLOSER HEAT-TREAT CONTROL — coupled with rigid testing insures uniformity.

LOCK-TYPE BUSHINGS (applied on a range of sizes) end a cause of stiff chain.

PRE-STRESSING of multiple width chain provides uniform load distribution.

*And you pay no premium for these LINK-BELT extras

THERE'S more to roller chain than just the parts you see. *Much more!* It's the hidden extras—standard on Link-Belt Precision Steel Roller Chain—that add up to longer life and lower costs.

Check the four extras shown here. Then for your demanding drive and conveying jobs, choose from the complete line of Link-Belt roller chains and sprockets: Single or multiple widths, ¼″ through 3″ pitch. Double pitch, 1″ through 3″. There's full ordering and application information in 148-page Data Book 2457. Ask your Link-Belt office or distributor for a copy today.

LINK-BELT

ROLLER CHAIN & SPROCKETS

11.656

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

For stress, wear or vibration a

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will hold tighter, wear longer, cost less!

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GRIPCO PRODUCTS INCLUDE:
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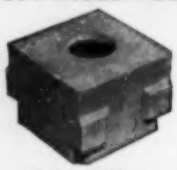

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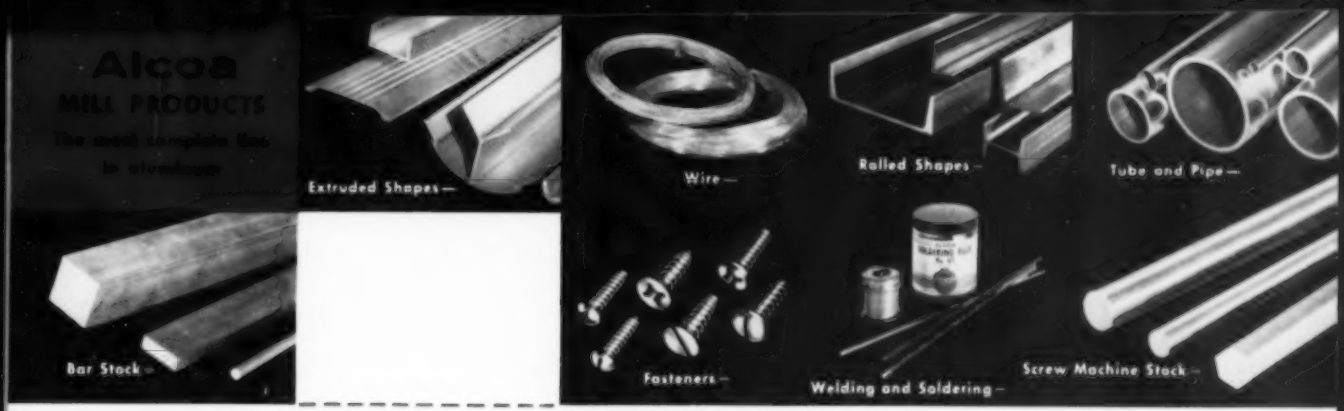


Announcing I.G.* Electrode, Alcoa's New Filler Metal for No-Flux, Consumable Electrode Welding

Soundness of joints made by consumable electrode welding depends to a great extent on electrode quality. By using Alcoa's new I.G. Electrode, you can have sound, quality welds every time. Now released after months of laboratory testing, this electrode is made under rigid quality control. Samples from every production lot are test welded, and the weld specimens are X-rayed for soundness. No electrode is shipped that doesn't in every way meet Alcoa's standards.

Each spool is carefully packaged and labeled according to alloy and wire size. Cleaned and ready for use, I.G. Electrode is offered in sizes from .030 inch to ⅛ inch, in three alloys, 1100 (2S), 4043 (43S) and 5154 (A54S). Ten pounds are level wound on an expendable spool in one continuous length.

Alcoa's I.G. Electrode for consumable electrode welding is just one more addition to Alcoa's already complete line of aluminum welding, soldering and brazing wires and fluxes. All these materials are available to you from ample stock maintained by your local Alcoa distributor. For further information about aluminum welding, call your local Alcoa sales office. Expert welding guidance and counsel, drawing on Alcoa's 66 years' experience, are available for your assistance. Look under "Aluminum" in the classified section of your telephone directory.

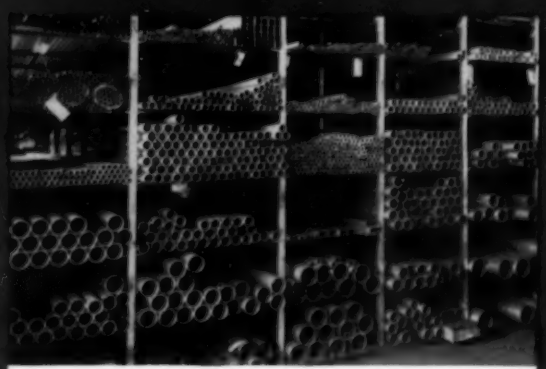
*I.G.—Inert Gas

Alcoa

Welding, Brazing and Soldering Supplies

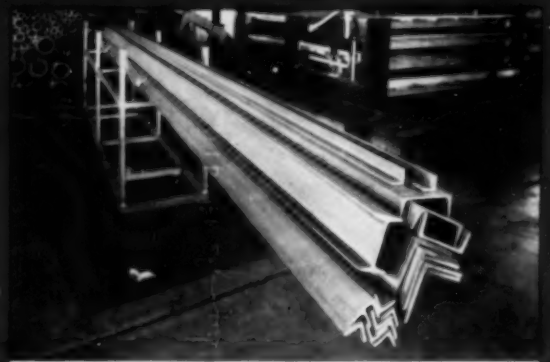
Products of Sixty-Six Years of Pioneering in Aluminum

EXTRUDED SHAPES: For thresholds; window sills; door frames; glass stops; copings; gravel stops; trim; truck bodies. Also angles; channels; tees; zees; etc., for structures.

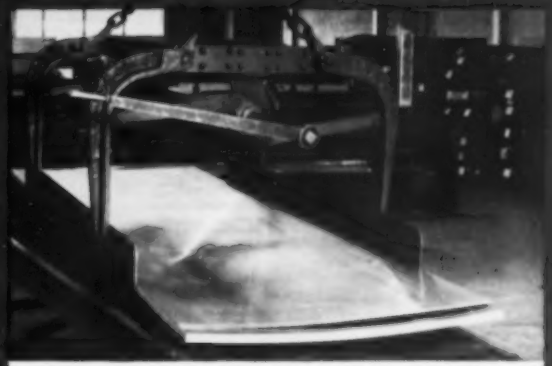


TUBE AND PIPE: Coiled tube; Alcoa® Utilitube; straight tube in round, square and rectangular shapes; heat exchanger tubes; standard pipe and pipe fittings; construction pipe; rigid conduit.

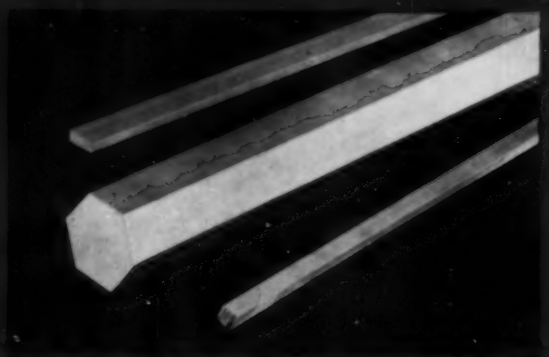
I.G. WELDING ELECTRODE: Available in three alloys and in six diameters. It is level wound on expendable spools in continuous lengths.



ROLLED SHAPES: Equal angles; unequal angles; channels; I-beams; tees; zees. Suited to a variety of structural applications.



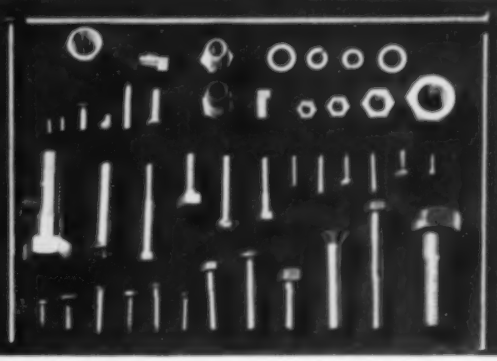
SHEET AND PLATE: Flat and coiled sheet; circles; patterned sheet; plate; tread plate; roofing and siding sheet; roofing accessories and fasteners; specialty sheet.



BAR STOCK: Square, hexagonal and rectangular in all commercial alloys. Rolled and cold finished to final dimensions for superior tolerance and finish.

SCREW MACHINE STOCK: Available in 2011-T3 (formerly 11S-T3), the free-machining alloy, and 2017-T4 (formerly 17S-T4), a higher strength alloy, plus 2024, 6061 and 7075 (formerly 24S, 61S and 75S).

WELDING AND SOLDERING: Welding and brazing wire; welding and brazing flux; solder flux; solder.



FASTENERS: Machine screws, wood screws; washers; nuts; bolts; rivets. Recommended for fastening aluminum to prevent electrolytic damage.

Your Alcoa Distributor has Alcoa Standard Warehouse items in stock

Your Alcoa Distributor is as near as your telephone and his warehouse is stocked with the aluminum products you need for fast, economical production. His facilities include modern equipment for sawing, shearing and slitting stock to your specifications and for making prompt deliveries.

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see our catalog in PLANT ENGINEERING FILE or write for copy

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ALCOA ALUMINUM

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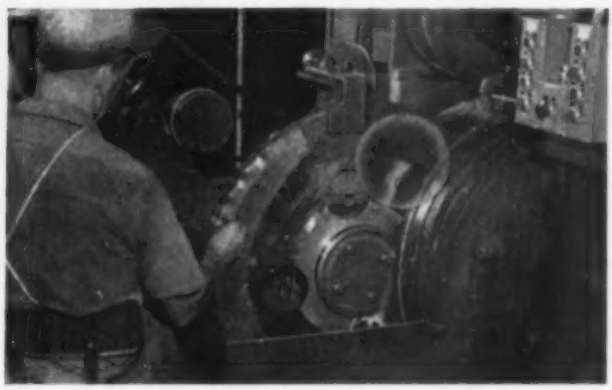
Norton covers the entire disc grinding range

Norton discs are engineered for every type of grinding, on all materials, all machines — to bring you the profit-boosting

"TOUCH of GOLD"



What Norton discs have done for others is good evidence of what they can do for you. Check these reports, typical of many from present users:

"Best discs ever received. Produced over 6,000,000 piston rings — 100% more than our former discs, with 50% less dressing. Results duplicated in subsequent shipments."

"Outlasted and outperformed all other discs — gave 366,975 pieces without burn."

"Averaged 21,500 pieces, a new high for this job."

"Outproduced previous discs 2 to 1."

"High above competition for output and grinding quality."

"Gave 20% longer service life."

Whatever your disc grinding requirements may be, Norton will meet them exactly — with discs engineered for coolest cutting action and longest, most productive service life. Norton discs of ALUNDUM® and CRYSTOLON® abrasives are made in all grit sizes, all grinding grades, five types of bonds and all types of mountings. They are precision-built, by exclusive Norton processing, to assure closest uniformity of grinding action from disc to disc and lot to lot. Which means that each time you re-order to the same specifications, you'll get the same top performance — next week, next month or next year.

See Your Norton Distributor

for practical aid in selecting the Norton discs that will add the money-saving "Touch of Gold" to every disc grinding job you do. Ask him for the new booklet, "Disc Grinding". Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities, listed under "Grinding Wheels" in your classified phone directory. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Massachusetts. W-1585

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NORTON

and its BEHR-MANNING division

NORTON: Abrasives • Grinding Wheels • Grinding Machines • Refractories
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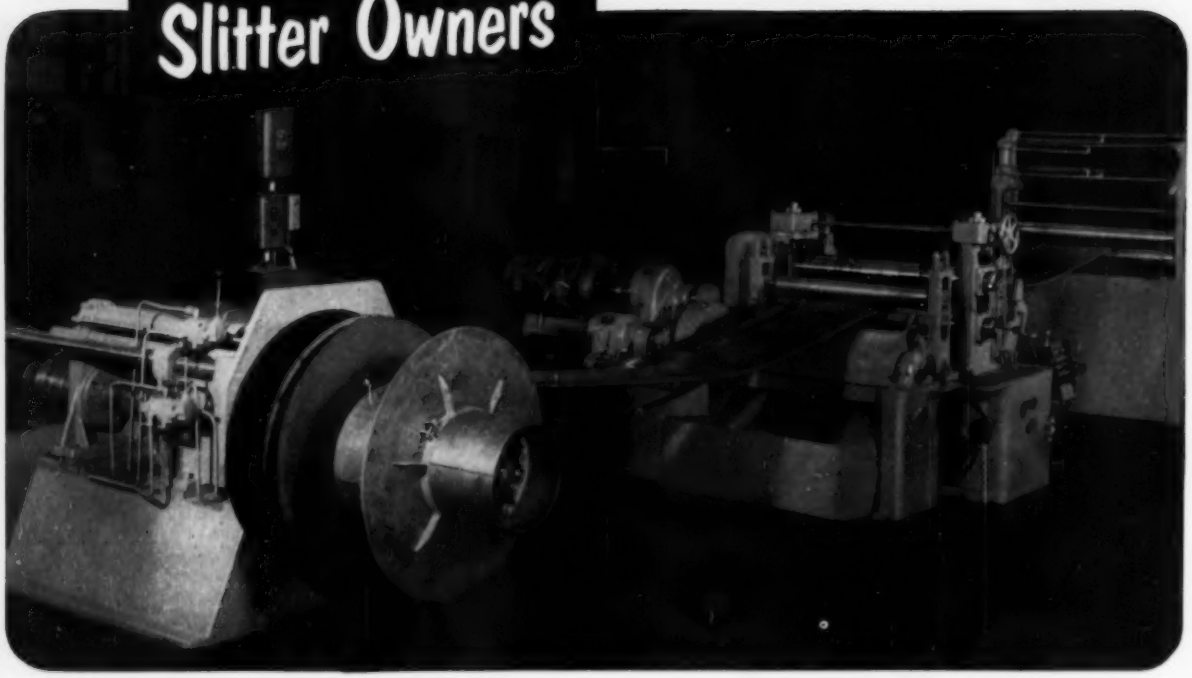
*Trade-Marks Reg. U. S. Pat. Off. and Foreign Countries

Ask any number of Yoder Slitter Owners



how they like it, and you may get as many different answers, because the benefits are so many.

One manufacturer said: "Our strip inventories have been reduced by 60% and greatly simplified. Our requirements in slit strands can now be quickly met from a relatively small stock of mill-width coils." Another manufacturer remarked: "We no longer have to worry about ordering strip long in advance, complicating our production planning." A third manufacturer made this comment: "We can now buy our strip wherever we can get the best quality, price and delivery. That saves a lot of time, money and worry."

Any one of these and other benefits may in itself be sufficient to justify the investment; yet, quite aside from this, the *direct savings in slitting cost always repays the investment in a short time,* often in less than a year.

Ask for the Yoder Slitter Book. It contains cost studies, time studies, information on scrap disposal, coil handling, small versus large slitters, and many other subjects of interest to users of coiled strip and sheets.

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Complete Production Lines

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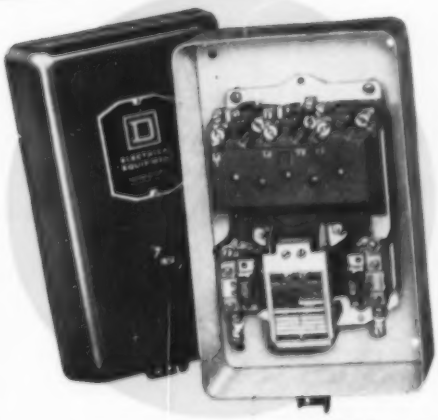

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IN CANADA - The WALLACE BARNES CO., Ltd., Hamilton, Ontario

CALENDAR
OF MEETINGS

October 30-November 5, National Metal Congress & Exposition: International Amphitheatre Chicago. Information: W. H. Eisenman, secretary, American Society for Metals, 7301 Euclid Ave., Cleveland 13.

October 30-November 5, American Society for Metals: Annual meeting, Palmer House, Chicago. Society address: 7301 Euclid Ave., Cleveland 13. Secretary: W. H. Eisenman.

October 31-November 3, National Screw Machine Products Association: Fall membership meeting, The Homestead, Hot Springs, Va. Association address: 2860 E. 130th St., Cleveland 20. Executive secretary: Orrin B. Werntz.

November 1-3, American Society for Personnel Administration: Annual meeting, Terrace Plaza and Netherland Plaza hotels, Cincinnati. Society address: Box 1413, Milwaukee. Secretary: Russell L. Moberly.

November 1-5, American Welding Society: Annual meeting, Sherman hotel, Chicago. Society address: 33 W. 39th St., New York 18. Executive secretary: J. G. Magrath.

November 1-5, Society for Nondestructive Testing Inc.: Annual meeting, Hotel Morrison, Chicago. Society address: 1109 Hinman Ave., Evanston, Ill. National secretary: Philip D. Johnson.

November 3-4, Investment Casting Institute: Congress Hotel, Chicago. Institute address: 27 E. Monroe St., Chicago 3.

November 3-5, American Management Association: Annual finance conference, Hotel Roosevelt, New York. Association address: 330 W. 42nd St., New York 36. Vice president-secretary: James O. Rice.

November 3-5, Annual Pittsburgh Diffraction Conference: Joint meeting with American Crystallographic Association: Mellon Institute, Pittsburgh. Information: Dr. P. K. Koh, Allegheny Ludlum Research Laboratories, Alabama Ave., Brackenridge, Pa.

November 4-5, American Institute of Mining & Metallurgical Engineers: Fall meeting, Southern Ohio section, National Open Hearth Committee, Deshler-Hilton, Columbus, O. Institute address: 29 W. 39th St., New York 18. Secretary-treasurer: Ernest Kirkendall.

November 4-5, Society of Automotive Engineers Inc.: National Fuels and Lubricants meeting, The Mayo, Tulsa, Okla. Society address: 39 W. 39th St., New York 18. Secretary: John A. C. Warner.

November 4-6, Air Pollution Control Association: Semiannual technical conference, Hotel Biltmore, Los Angeles. Association address: 4400 Fifth Ave., Pittsburgh 13, Pa. Executive secretary: Harry C. Ballman.

November 4-7, National Tool & Die Manufacturers Association: Annual convention, Dayton Biltmore hotel, Dayton O. Association address: 907 Public Square Bldg., Cleveland 13. Executive secretary: George S. Eaton.

November 5, American Iron & Steel Institute: Regional closed technical meeting, Mark Hopkins hotel, San Francisco. Institute address: 350 Fifth Ave., New York 1. Secretary: George S. Rose.

November 7-10, American Institute of Wholesale Plumbing & Heating Supply Associations Inc.: Fall meeting, Hotel Roosevelt, New Orleans. Association address: 402 Albee Bldg., Washington. Executive secretary: George T. Underwood.

November 8-11, Wire Association: Annual fall meeting, Hotel Statler, Detroit. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

November 8-12, Montreal Chapter, American Material Handling Society and Foremen's Club of Montreal: Combined materials handling and tool and equipment show, Show Mart Bldg., Berri Square, Montreal. Information: E. M. Wilcox Ltd., 4585 Sherbrooke St., W. Montreal, Quebec.

November 8-12, National Electrical Manufacturers Association: Annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J. Association address: 155 E. 44th St., New York 17. Managing director: W. J. Donald.

Centrifugally cast Meehanite Metal rams with shoulders grooved for piston rings. These Shenango-produced 18-foot rams can be relied upon to offer outstanding performance.

HOW SHENANGO CASTINGS PAY OFF IN PERFORMANCE!

SHENANGO'S centrifugal castings of Meehanite Metal offer added advantages not found in ordinary castings—advantages that truly pay off in long-lived trouble-free performance.

First, there's pressure-dense grain for a smoother finish and increased tensile strength to better endure stresses and strains. The absence of blowholes and sand inclusions results in fewer rejects and the avoidance of costly failures and down time.

So, if your plans call for castings — rough, semi- or finished parts, ferrous or nonferrous, remember—Shenango casts the money-saving answer. For complete information regarding Shenango centrifugal castings of Meehanite Metal, write today to:

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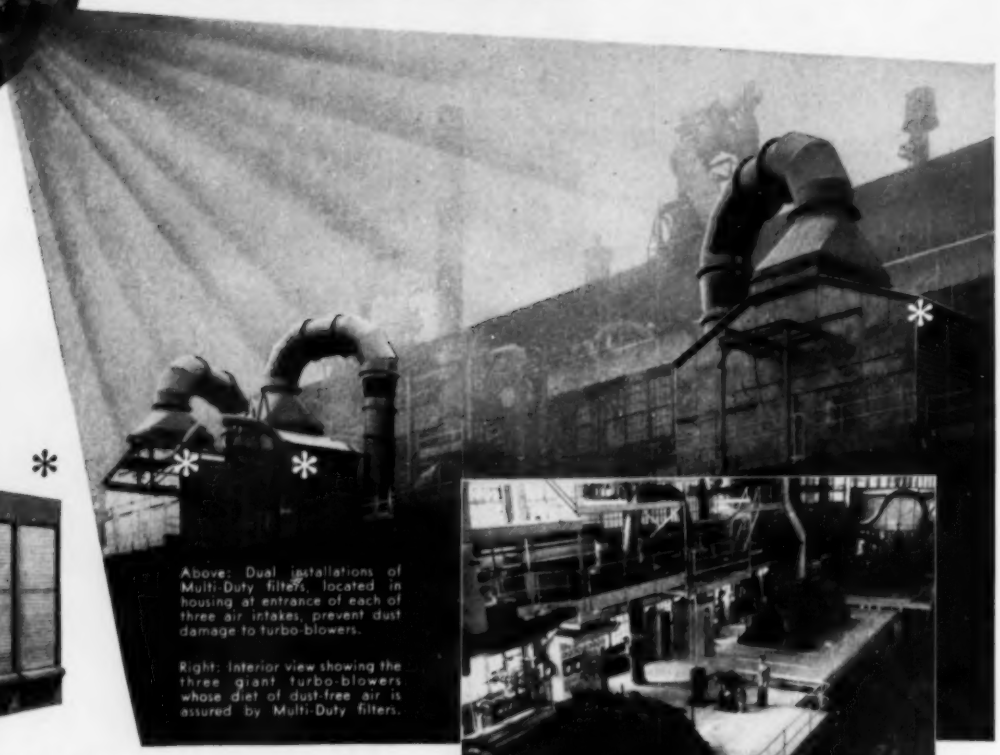
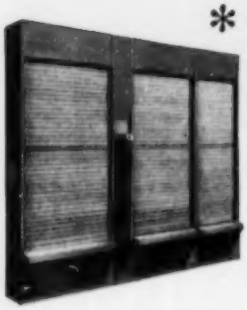
COPPER, TIN, LEAD, ZINC BRONZES • MONEL METAL
ALUMINUM AND MANGANESE BRONZES • NI-RESIST • MEEHANITE METAL

How to whip up a wind storm WITHOUT DUST!



Above: Dual installations of Multi-Duty filters, located in housing at entrance of each of three air intakes, prevent dust damage to turbo-blowers.

Right: Interior view showing the three giant turbo-blowers whose diet of dust-free air is assured by Multi-Duty filters.



Multi-Duty Filters Insure Clean Intake Air For Trio of Giant Turbo-Blowers

THE three massive turbo-blowers shown in inset supply the combustion air for the blast furnace operations at this large Eastern steel mill. The air they swallow must be free of dust or these minute abrasive particles will quickly wear their impeller blades—and that means "down time" that's measured not in cost of repairs but in dollars of vital steel production lost.

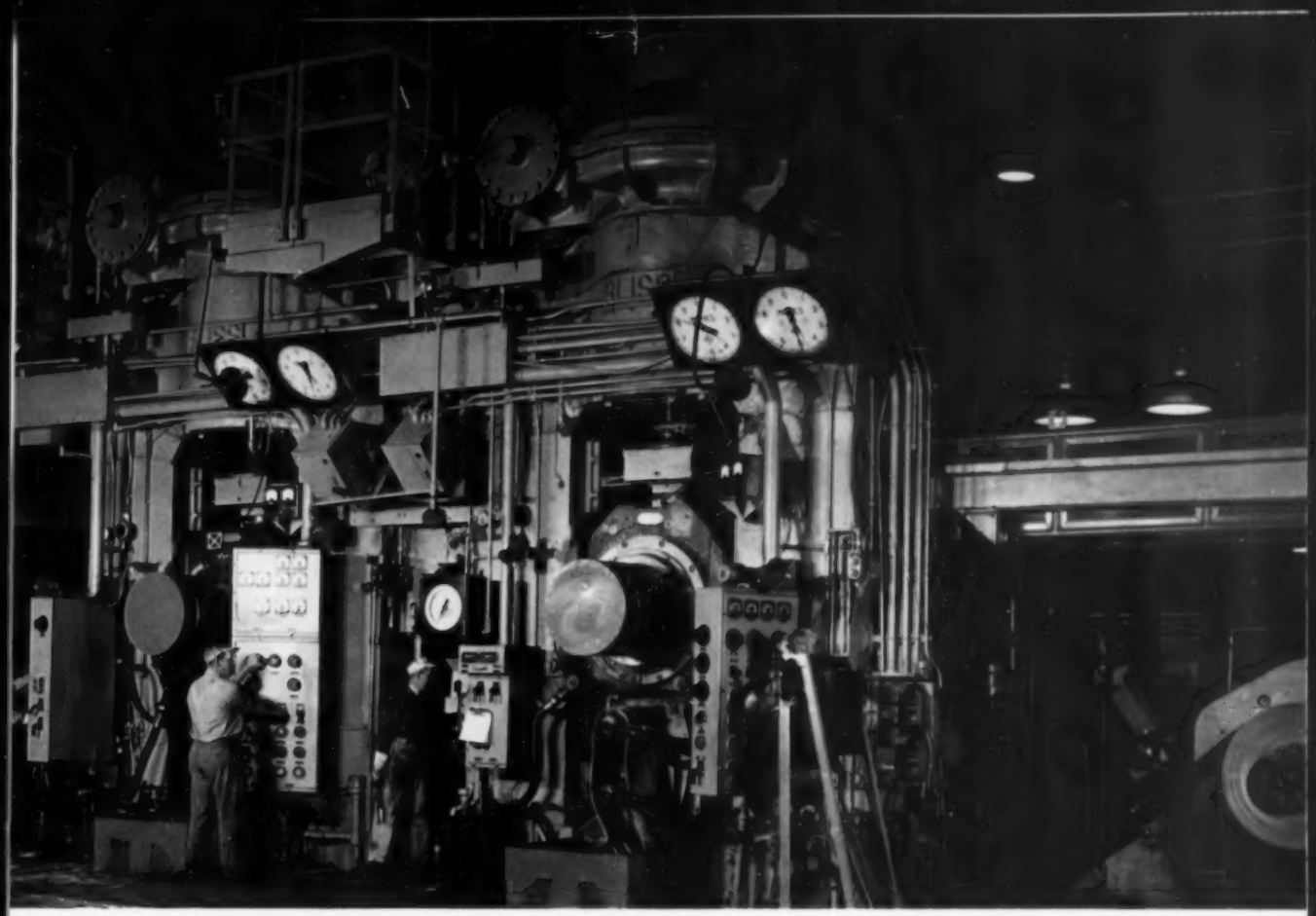
Here, as in scores of other steel mills, AAF Multi-Duty was assigned the all-important air cleaning job. This automatic, self-cleaning filter is designed for constant efficiency and uniform air cleaning regardless of the dust load. It works every shift without supervision — requires no attention other than periodic inspection and removal of sludge at regular intervals.

For complete information on the Multi-Duty and its "work record" in the steel industry, just call your local AAF representative or write direct for Bulletin 241.

AAF herman nelson

American Air Filter
COMPANY, INC.

American Air Filter of Canada, Ltd., Montreal, P. Q. • 443 Central Avenue, Louisville 8, Kentucky



At Jones and Laughlin Steel Corporation...

High Speed Tin Temper Mill has **RUGGEDNESS** and **POWER** to match

Speed, ruggedness, power and the latest coil-handling equipment . . . characterize this tandem mill at J & L. These features, combined with modern electrical control systems, make this one of the most advanced mills in use today.

Its top-rated speed of more than 6000 fpm furthers the trend to faster, more reliable mills . . . capable of better quality at higher speeds . . . with easier control.

Speed, power and rapid acceleration and deceleration features . . . all these pay off in terms of greater tonnage. In addition, mechanical and semi-automatic coil handling equipment—designed for extra large coils—at entry and delivery ends add to personnel safety and increase the productivity of this mill.

This J & L installation is one of many startling developments in modern mills engineered by Bliss for leaders in the steel and non-ferrous plants both here and abroad. For more information about Bliss rolling mills, write today for Catalog 40-A . . . Bliss' 60-page rolling mill brochure.

Remember: BLISS SINCE 1857 **for Presses, ROLLING MILLS, Special Machinery**

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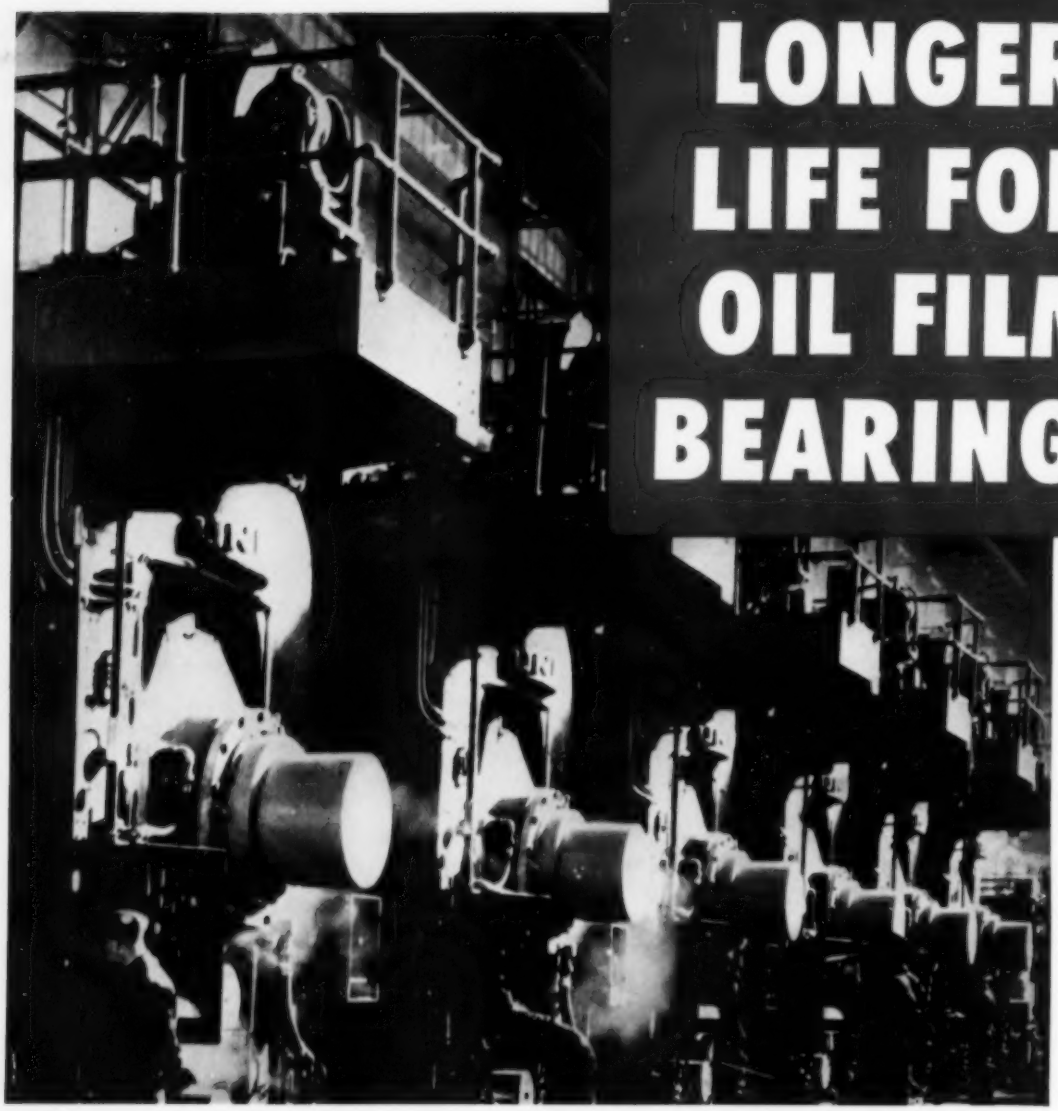
LONGER LIFE FOR OIL FILM BEARINGS



WITH *Texaco Regal Oil,* oil film bearings on back-up rolls operate at greater efficiency, cost less to maintain, last considerably longer. *Texaco Regal Oil* in your circulating system assures a steady, uninterrupted flow of sturdy lubricant that keeps bearings clean and protected and oil lines clear.

Texaco Regal Oil is a heavy, turbine-grade oil. It resists oxidation, emulsification and sludging. Especially developed for continuous rolling operations, *Texaco Regal Oil* separates quickly and easily from water . . . assures trouble-free performance and lower maintenance costs.

To raise the efficiency of enclosed reduction gears, use *Texaco Meropa Lubricant.* It has outstanding EP stability, extra resistance to oxidation, thickening and foaming.

A Texaco Lubrication Engineer can help you increase output at lower unit cost. Find out how by calling the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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(HEAVY CIRCULATING OILS)

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STEEL

November 1, 1954

Metalworking Outlook

Heavy Presses: Quiet Developments

The highly publicized heavy press program isn't as dead as some rumors indicate, but the relative quiet about it will continue until aircraft and other producers have time to work with the units already built and to design with heavy-press concepts. Some experts still predict rapid development, although two or three years may elapse before it's evident.

Ore Plentiful, Season Light

The 1954 Lake Superior iron ore carrying season will be virtually over about Nov. 15. A few vessels will probably stay in operation until around Dec. 1, but even that won't bring total tonnage carried to more than some 60 million gross tons. So, 1954 probably will see the lightest haul since 1946, when 59.4 million tons were brought down. The mills have plenty of ore, though, because of lower ingot operations this year and because of the record 95.8 million tons shipped in 1953.

AFL Eyes Electrical Workers

CIO electrical workers aren't the only ones trying to pick up the pieces of the crumbling United Electricalworkers. AFL's International Brotherhood of Electrical Workers is stepping up a campaign to pull in splintering locals of the independent union, once part of the CIO. One of the scoops IBEW will use next year will be the objective of a 30-hour week without a cut in pay. IBEW has also announced plans for an organizational drive in 1955 in opposition to the CIO's IUE.

FTC Studies Mergers

The Federal Trade Commission's study of the post-Korean pattern in industrial mergers won't be finished for several months. The commission currently is studying 209 mergers or company acquisitions. Mergers fell off through the 1930s to a low of 87 in 1939, but rose again in the 1940s to 419 in 1946, after which they declined to 137 in 1949. In 1951, consolidations jumped to 703, the largest total since 1930. They rose to 822 in 1952, then slipped to 793 in 1953. During 1954's first half, there were 295 mergers or acquisitions in manufacturing and mining fields.

More New Firms, More Failures

Business failures reported by Dun & Bradstreet this year are running 27 per cent higher than they did a year ago, 45 per cent higher than they did two years ago. On the other side of the coin, new business incorporations are up about 10 per cent from a year ago and up 23 per cent from two years ago.

Unemployment To Drop More

Look for a continuing drop in unemployment over the rest of the year. It's 2.7 million now, down 400,000 from just a month ago. Factory hiring rates are climbing steadily as the auto industry begins to get rolling on 1955

Technical Outlook—p. 81 Market Outlook—p. 119

models. Earnings are up, too. In September, the latest month for which complete figures are available, the average factory worker earned $71.86 a week, an all-time high for the month. After deductions for social security and federal taxes, a worker with three dependents took home $66.78 a week, a sum exceeded in only four other months in history.

A Note on Plastics

Makers of equipment for the plastics industry take note: Annual consumption of plastics will exceed 4 billion lb by 1957, compared with 3 billion lb in 1953, which, in turn, was double the 1949 use. Consumption in 1954 will probably exceed 1953 levels by not more than 5 per cent. John Walsh of Arthur D. Little Inc. told the Society of the Plastics Industry that the economic pattern of the industry is one of rapid gains for a few years, then a short catching-up period. He thinks that the leveling off is going on and that a period of rapid gains will come again by 1957.

Splash in Shipbuilding

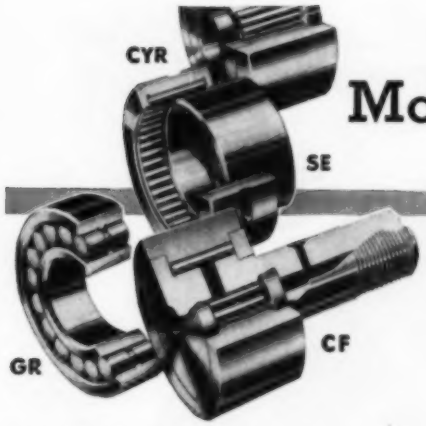
Things are stirring in shipbuilding. Bethlehem Steel Co.'s Quincy, Mass., yard has a $32.5 million contract to build two destroyers. The Bethlehem subsidiary, Bethlehem Pacific Coast Steel Corp., has a $15.4 million contract to construct two escort vessels for the Navy. In addition, Bethlehem will undertake a study of the use of atomic power to drive commercial ships. The company had earlier won the contract to start work on development of an atomic-powered surface warship. Bethlehem will bear most of the costs of the commercial ship program.

Straws in the Wind

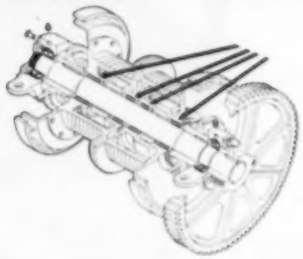
General Services Administration will extend until Jan. 31 the lease with Dow Chemical Co. on the U.S.-owned magnesium plant at Velasco, Tex. . . . The Army awarded nearly $1 billion in procurement and production contracts from July through September . . . A federal court has blocked sale of Follansbee Steel Corp.'s physical assets to Frederick W. Richmond and Republic Steel Corp. until the purchase offer of a local group is considered . . . General Motors Corp.'s net income for the first nine months was $585 million on sales of $7.2 billion.

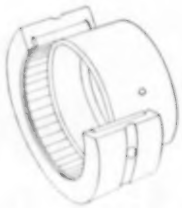
This Week in Metalworking

Construction volume will hit a record $36.5 billion in 1954 (p. 39) . . . Research on commercial application of nuclear energy is mushrooming (p. 41) . . . Steel industry earnings hit a 1954 low in the third quarter, but they will improve in the fourth (p. 42) . . . Look for increased buying for at least the next three months of steel, copper and aluminum as the inventory adjustment ends (p. 43) . . . This year's business for makers of paper and pulp processing machinery is good as the paper industry plans a $500 million expansion (p. 44) . . . Zirconium output may increase 500 per cent in the next five years (p. 45).

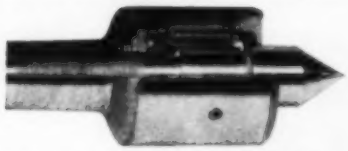


McGILL BEARING BRIEFS





MOTOR TOOL LIVE CENTERS DEPEND UPON McGILL FOR HIGH RADIAL ACCURACY



Multirol SE Bearings, press fitted into Motor Tool Live Centers, "account for accuracy and long life of these units." They take the radial loads of lathe, screw machine and grinder operation without radial looseness or play.

ROUSSELLE PRESSES USE MULTIROL SE BEARINGS EXCLUSIVELY FOR 8 YEARS

Service Machine Co., Chicago, have used Multirol SE Bearings exclusively for over 8 years on their Rousselle heavy duty presses. Two SE Bearings mounted side by side, support and carry the heavy fly wheel load on all 15, 25, and 40 ton models.

MULTIROL® SE Bearings
CARRY HEAVIER LOADS MORE ECONOMICALLY
On Baldwin-Lima-Hamilton Cranes and Shovels

The heavy cable loads on the Hoist Drum Shaft of Cranes and Shovels require a heavy duty bearing that occupies a minimum of radial space. The Multirol SE Bearing provides the answer to dependable performance in this application. Its trouble-free operation under heavy loads with long life expectancy has effected considerable savings in service charges for users of Lima Cranes, Shovels, Draglines and Pull Shovels.

By packing more load carrying capacity into a smaller radial space, Multirol Bearings permit use of a larger shaft and a heavier drum section. This eliminates the tendency for the crushing load of the cable to bind the shaft and reduces shaft deflection.

Baldwin - Lima - Hamilton has been using Multirol Bearings for many years and depends on such design advantages as lubrication reservoirs above roll ends, one piece outer and roller retaining end shoulders, the sealing effect of close end shoulder and shaft clearance against foreign particles, etc. To get the same dependable and long lasting performance in your products, always specify McGill Bearings.

BEARING SELECTION GUIDE
A new 140-page Bearing Selection Guide, complete with 30 pages of vital engineering data, has been released by the McGill Manufacturing Co. Ask for Catalog No. 52.

McGILL® — Precision Bearings
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301 N. Lafayette Street, Valparaiso, Indiana

NEW TUBING with a Special Zinc Coating

Have you avoided using welded steel tubing in your products because you couldn't get the rust protection of a zinc coating? Now you can obtain Armco Steel Tubing made of ZINCGRIP, the special zinc-coated steel made by a patented process. Even the welded and recoated seam is so smooth that it can be found only by careful inspection.

IT'S A SALES-AID

Why not find out all about this new lightweight structural? It has already improved many other products—made them more saleable.

Armco ZINCGRIP Tubing is supplied not only in rounds, but in squares, rectangular shapes, hexagons, octagons and special shapes, all with unbroken zinc coatings. That's because the special hot-dip coating on ZINCGRIP takes as severe forming as the steel base. It does not flake or peel.

Rounds are produced in outside diameters from 5/8-inch through 3 inches and in wall thicknesses of 20 gage through 12 gage, depending on size. For complete information just fill out and mail the coupon.

OTHER SPECIAL ARMCO STEELS

Besides ZINCGRIP Tubing, Armco produces hot- and cold-rolled welded steel tubing. Armco is also a major producer of Cold-Rolled Sheets and Strip, Enameling Iron, Electrical Steels, Stainless Steels, and sole producer of ALUMINIZED STEEL, ZINCGRIP and ZINCGRIP PAINTGRIP Sheets and coils.

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"Selling" Begins at Home

Piercing the din of hymns of hate allegedly being sung against the United States in many nations are occasional favorable appraisals by foreign critics. Two appeared in news magazines last week.

The Oct. 25 issue of *Time* quoted Indro Montanelli, Italian political analyst: "The real trouble—the great inexplicable crime of the Americans—is that they really are better than us Europeans. . . . They are better intentioned, ready to sacrifice the individual for common good, more candid, more trustful of others and more ready than we are to see the good rather than the bad side of things."

The other appraisal is by-lined by Henry Hazlett in the Oct. 25 issue of *Newsweek*. Mr. Hazlett refers to the book "What Is the Cause of the Economic Superiority of the United States?" by Prof. William E. Rappord, eminent Swiss economist. Professor Rappord says the United States is the world's richest nation because it is the world's greatest producer of wealth. This is "less because it has been generously endowed with natural resources than because it has succeeded in deriving from the labor of its people a much better material result than its competitors. Elements in America's success (he believes) are mass production, application of science to production, a passion for productivity and the spirit of competition. These created an internal free market without equal on the face of the globe."

If an American were to say what Messrs. Montanelli and Rappord have said, he would be accused of boasting. However, the achievements they acclaim stem from our free, competitive, economic system which any nation is free to adopt. Should we be condemned for encouraging others to improve their position?

Yet, can we be too critical of other nations when right at home we have eminent persons who do not appreciate our blessings? In tomorrow's elections American citizens are being asked to vote for some candidates who would foolishly exchange our fine, successful system for socialistic or other systems that have an unbroken record of failure.

The blunt truth is that we must do a better job of "selling" our system to our own people!

E. C. Shaner

EDITOR-IN-CHIEF

A LOT OF WORK TO DO: Construction activity has been a major factor in enabling this nation to shift from a wartime to a peacetime economy with much less than usual confusion. By virtue of high volume in residential, commercial and industrial building and in highway, public utility, institutional and public works projects, total expenditures for con-

struction have been maintained at extraordinarily high levels for five years or more. Totals for 1954 (p. 39) are expected to establish a new record, and experts are predicting that the volume in 1955 will at least equal that of the current year.

This sounds optimistic, but bare facts call for optimism. We are far behind in construction in many lines. Turnpikes, freeways and other improved highway construction will provide for a decade or more many more projects than can be handled efficiently with present facilities. More schools, hospitals and institutional buildings are needed than will be built for several years. The total impact of the St. Lawrence waterway upon Great Lakes channels and ports lies ahead.

The demands of construction activity never have been more challenging.

A CRISIS LAY AHEAD: Members of the American Institute of Steel Construction last week were in their annual convention at White Sulphur Springs. They were exulting because the tonnage of structural steel (p. 39) fabricated and erected in 1954 will establish an all-time record.

Old-timers may remember that in the early days of AISC prospects were not as rosy as they appear to be today. There was an annual meeting scheduled for Pittsburgh in the early twenties. The prime movers of the infant AISC were Lee Miller, an ex-Bethlehem Steel engineer, and Charles F. Abbott, super salesman.

As the date of the Pittsburgh meeting approached, Mr. Miller and Mr. Abbott were painfully aware of the fact that the members of AISC were not too solidly "sold" on the organization. As a matter of fact, a few important members already had written into headquarters threatening to resign.

They both realized this was a crisis.

PUBLICITY FOR STEEL: Mr. Abbott was impressed by the wide readership of Arthur Brisbane's daily newspaper column. He went to Mr. Brisbane's office. Standing near a window and looking down into the street, he asked: "Mr. Brisbane, is it true that when you write your column you try to phrase it in terms those people down there can understand?"

"Yes," replied Mr. Brisbane, "Why do you ask?" "Because," countered Mr. Abbott, "I'm wondering whether you would write a column for the man in the street about what fabricated structural steel means to him." They discussed the project for some time and finally Mr. Brisbane agreed to do a column on structural steel.

The jubilant Mr. Abbott quickly phoned Lee Miller and during the next few days they concentrated upon collecting source material for Mr. Brisbane.

TIMELY SHOT-IN-ARM: By the opening day of the annual convention in Pittsburgh no word had been received from Arthur Brisbane. However, on the last day, about two hours before the annual banquet was to start, a telegram was received that contained the text of the column on structural steel which was to appear in newspapers on the following day. This text was read at the banquet, and it made a profound hit.

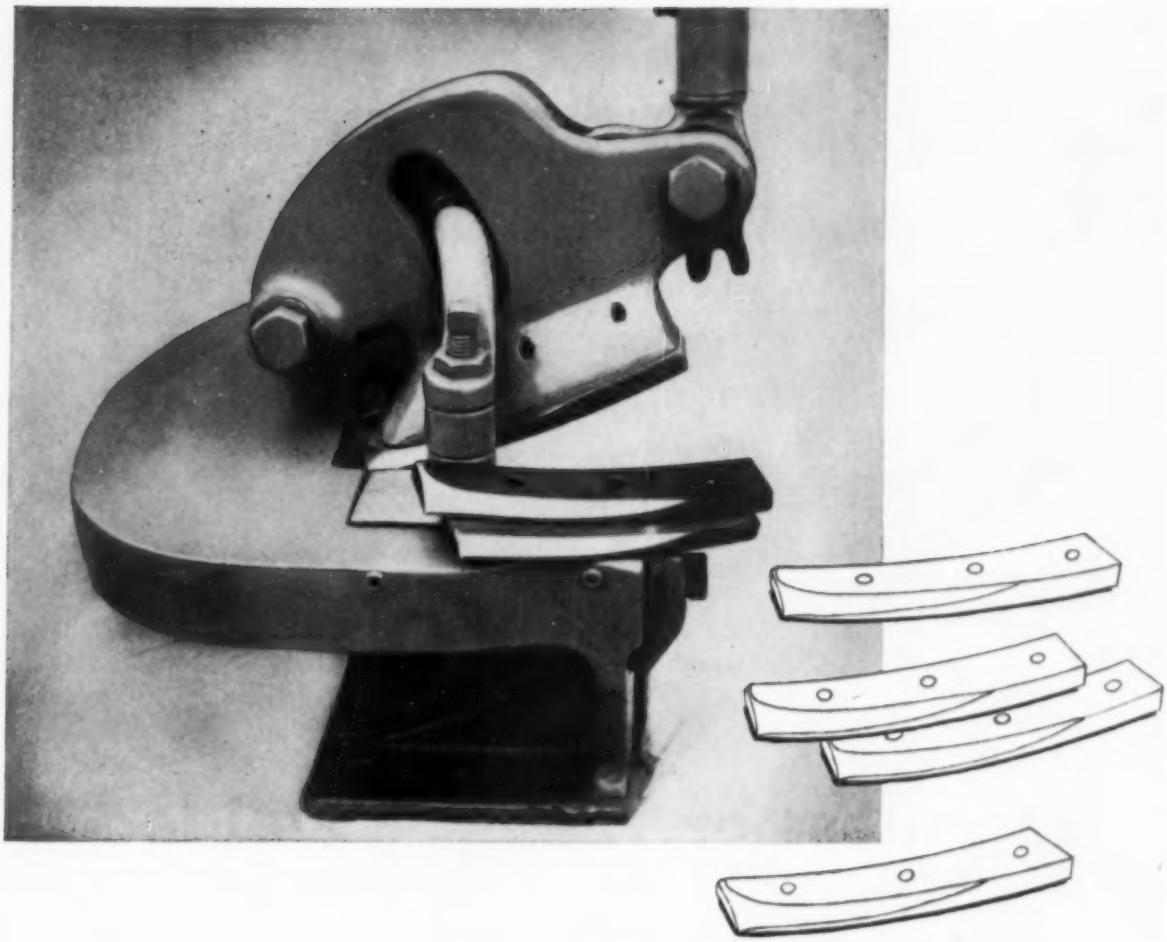
Back in New York headquarters after the convention, Mr. Abbott and his small staff were overwhelmed by inquiries resulting from Mr. Brisbane's column. Extra office help had to be hired temporarily to handle the mail. The interest in structural steel was just the shot-in-the-arm the young organization needed to put it on its feet.

From that time forward, AISC has grown in stature and prestige, serving its industry with outstanding efficiency.

VERSATILITY PAYS OFF: A shop in Dallas, Texas (p. 51), developed a thriving business building coil handling equipment. A natural question arises. How could this company survive in a location so far from its potential customers?

In lieu of a direct answer, we submit these facts. Sixty years ago local machine shops sprung up in the northeastern section of the country to serve the then active oil refineries, canneries and glass factories. When these industries departed to more attractive locations, the bereft shops sought other customers. They found them in metal fabrication, plastics, electronics and many other enterprises.

Today, many shops in odd locations are doing well in pursuits far remote from their original objectives. This is a tribute to the versatility of the free enterprise system.



Shear Manufacturer ups blade life 4 to 5 times . . .

with A-L HURON DIE STEEL

Write for Your
HURON BLUE SHEET

A compilation of facts on the handling and shop treatment of Huron. Includes complete information on forging, annealing, tempering, etc. and detailed laboratory data on physical characteristics. *Ask for your free copy.*

Address Dept. S-59

A Chicago bench shear manufacturer produced some test blades of Ludlum HURON die steel—heat treated to 61-62 Rockwell C.

Service life of the HURON blades proved to be four to five times that of the former blades. Resharpenings were reduced 75 to 80%! Because these new HURON blades held an exact rake and maintained a proper cutting arc, they easily sheared 3/16" mild steel or 10 gauge stainless.

Ludlum Huron was developed for use where high resistance to wear and abrasion is necessary, and where heavy pressure rather than sudden shock must be withstood. Huron has excellent non-deforming properties, and hardens to a great depth.

There is an A-L tool steel that will help solve your cutting, forming or blanking problem. Call our nearest office or distributor today, or write ***Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pennsylvania.***

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Allegheny Ludlum

WAD 5329

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Ryerson tubing experts help you select from world's largest stocks

Seamless or welded? Hot or cold rolled? Round or square? Whatever the type, size and wall thickness—you get what you need, quickly, when you call Ryerson for tubing.

That's because our tubing stocks are so large and diversified—are, in fact, the nation's largest. And because we have *a tube for every use* you can be sure of completely unbiased recommendations when you consult Ryerson specialists on tubing problems.

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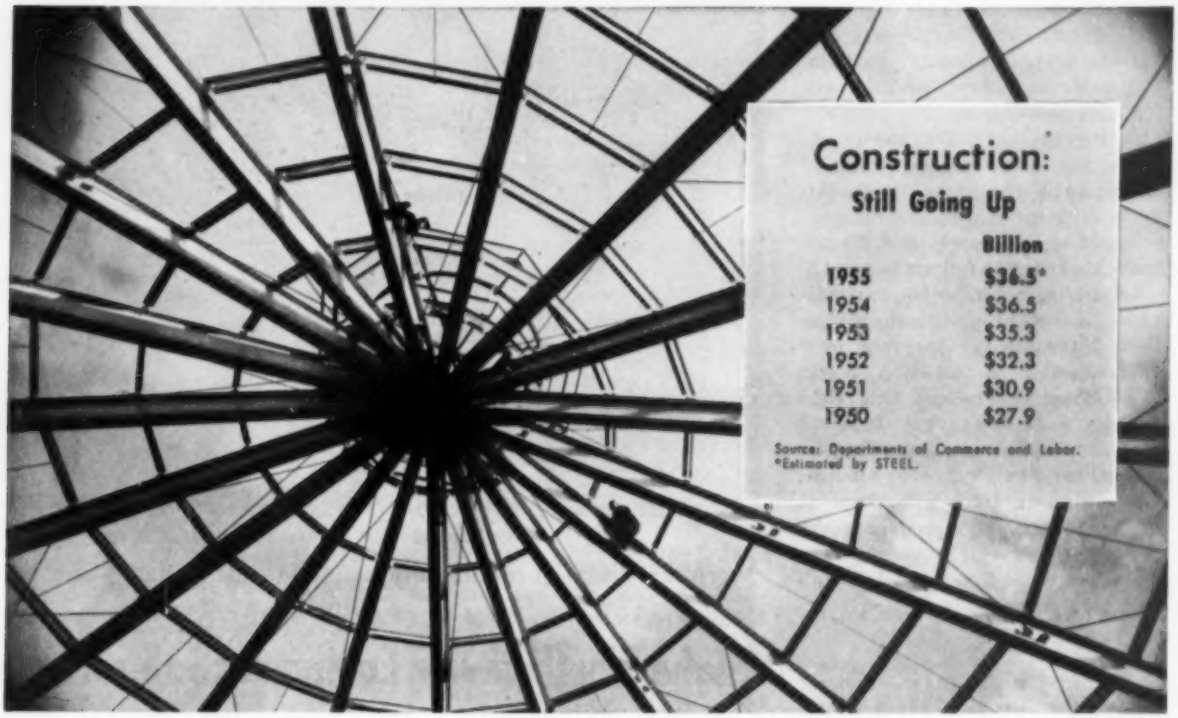


Ford Motor Co.

Construction in '55: Pattern for Optimism

CONSTRUCTION, bright spot in the nation's economy this year, will play an equally shining role in 1955.

September activity matched the all-time peak volume ($3.6 billion) hit in August; that pegged new construction totals at 4 per cent above those of the similar nine-month period in 1953. At the end of the year, new construction will have chalked up a new record—$36.5 billion (see table).

Plus Factors — What are the prospects for 1955? Construction will maintain its $36.5-billion pace. Here are the plus factors:

Private housing should enjoy another million-unit-plus year. Mortgage money is still easy, personal income is stable, more GIs are expected to take advantage of their home-loan privileges.

Backlog — Commercial building, which exceeded the $200-million mark in September for the third consecutive month, will continue strong. There's still a backlog here.

Structural Shipments To Hit 25-year High

FABRICATED structural steel shipments this year will total 3.2 million tons, highest in 25 years. Construction projects proposed for 1955 indicate the industry will do as well, or better, next year.

Expanded programs for highway and school construction assure a high level of building through next year. Says L. Abbett Post, executive vice president, American Institute of Steel Construction:

Road to Prosperity—"Tabulations covering only 18 states show they contemplate spending $4.5 billion for toll highways alone. These super highways will require thousands of bridges, overpasses and underpasses. The 160-mile Garden State Parkway in New Jersey will have 282 crossings all of steel. The 427-mile New York to Buffalo thruway will have 507 crossings."

Bidding Tight—While structural steel fabricators are optimistic over the prospective volume for 1955, they are concerned over the keen competition for jobs that has characterized the industry this year. Tight bids have lowered profit margins substantially.

John E. Jackson, president of AISC and also president of Pittsburgh-Des Moines Steel Co., Pittsburgh, chided the institute's membership for its overly keen internal competition at the institute's meeting at the Greenbrier Hotel, White Sulphur Springs, W. Va.

Promotion—Mr. Jackson outlined a series of promotion, engineering and research projects, to improve his industry's competitive position with other construction materials.

and new private housing is adding to expansion requirements.

Public expenditures for highways (see STEEL Oct. 18, p. 49), new schools and community projects, like water and sewer facilities, will continue upward.

Softness—There are some soft spots, but they will be offset by the gains in the above fields. Defense outlays by the federal government dipped more than 30 per cent this year; no upturn is seen.

Industrial construction expenditures, down 11 per cent in the first 9 months of this year over 1953, remain a question mark. Most observers believe this field will be weak next year, too, but some are optimistic. Says Bechtel Associates, San Francisco: "Indications suggest 1955 will show at least a 10 per cent increase over 1954. Commitments in petro-chemicals, power and industrial chemicals plus advances in nuclear energy studies suggest strong activities."

A Good Time To Build—Another reason for optimism in continued high-level construction next year is the expected stability of construction costs. In a recent Associated General Contractors of America Inc. survey, 75 per cent of the members expected no change in material costs next year; 60 per cent said wage rates would hold line, although 39 per cent look for an increase.

Construction's 1955 outlook adds gloss to metalworking's prospects for next year, too. Construction was a business mainstay this year —and indications are that steel is taking a bigger share of the construction dollar each year. Some examples: Private home construction is using more steel for floor joists and other framing; kitchen cabinets and appliances sold in package deals. In commercial buildings, steel facades are replacing many brick and mortar walls. In highway construction, complex expressways and heavier load requirements are taking more pounds of steel per construction dollar.

A Tidy Extra — No sleeper in dollar volume either is the estimated $15-billion annual expenditure for repair and maintenance. Metalworking with its boost to the "do-it-yourself" market has a real vested interest in this phase.

Wide World

More construction means bigger mountains to move and . . .

Higher Earthmoving Equipment Sales Ahead

EARTHMOVING equipment makers are hoping the projected highway and building construction activity will mean bigger mountains to move in 1955. They'd like to push sales to a higher plateau than those reached this year.

Shipments of excavating and earthmoving equipment (except power cranes and shovels) totaled $277 million in the first half of 1954. That's down about 20 per cent from figures for the same 1953 period, according to Commerce department figures. Best year for the industry was 1952 when sales hit $607.8 million.

Surpluses Hurt—A factor in this year's dip, even though construction is at a record pace, was the large amount of surplus equipment from the Korean war, a midwestern producer states. "This was bought up to build atomic energy and other government facilities. Most of the equipment, however, has been used up, and we should see a sales increase in 1955."

Biggest markets for the equipment are in the eastern part of the country—the turnpike projects, plus a high rate of other construction, account for this. Many equipment makers, however, say that as turnpike construction moves west, so will the greater share of the markets.

Increased Leasing — Producers report outright purchases still account for the largest part of their business. But many dealers say they're leasing more and more equipment.

The number of large-scale construction projects in the postwar years has led to the development of and increased demand for larger, more powerful earthmovers.

J&L's Show of Confidence

New plant and equipment expenditures are always a show of confidence in business activity.

Jones & Laughlin Steel Corp., Pittsburgh, cast its vote last week by announcing a $50-million program for 1955. "We're planning to enlarge and improve the pattern of products which can be produced from steel rolled on present facilities," Adm. Ben Moreell, board chairman, stated. Major projects include:

1. Additional equipment for producing new joist sections at the 14-in. bar mill at the Aliquippa, Pa., Works. Included will be heavier roll stands, shearing and straightening equipment for pro-

ducing roof and floor joists.

2. Additional facilities at Aliquippa for producing high strength and special seamless tube used in the oil industry. Deeper wells and greater pressure requirements are demanding higher strength products in this line.

3. An electricweld pipe mill at Aliquippa to produce pipe for the oil industry. Virtually a new product for J&L, its production is planned in sizes from 4½ to 12¾ in. OD.

4. Improved and additional wire and wire specialty manufacturing facilities. Drawing and heat treating equipment will be added at Aliquippa. J&L will place more emphasis on manufacturers' wire and high carbon specialty wire.

5. A continuous galvanizing line at Pittsburgh. This will be the company's first continuous line; production will be aimed at 7000 to 8000 tons of 14 to 30 gage sheet each month.

J&L's expansion and improvement expenditures this year will total about $29 million.

Gearmakers Report on Business

Gear producers aren't cutting record sales patterns this year, but bookings compare favorably with the general level of business.

That was the consensus at the American Gear Manufacturers Association meeting in Chicago last week. Richard B. Holmes, president, reported that member companies had a sales volume of $120 million the last 12 months and that business is picking up.

The AGMA president stressed, too, that electronics, automation and other growing fields were creating wider horizons for gears.

On the technical side, Meriwether L. Baxter Jr., chief research engineer, Gleason Works, Rochester, N. Y., described the "Unitool method" of cutting spiral bevel and hypoid gears. It permits gearmaking in small lots with minimum equipment and without specially trained personnel.

Attractive to small gear shops for normal requirements, the method is not intended to replace highly refined quantity production methods.

Atomic Research Gains New Momentum

New and expanded research projects will be financed by both the government and private industry. Government patents available to industry now number 726

ATOMIC IMPACT on industry may be years away, but research for peacetime uses of atomic energy is mushrooming.

Giving impetus to the trend was the recent revision of the Atomic Energy Act and the release of 20 patents owned by the government. To date, 726 such patents have been made available to industry. Licenses granted are nonexclusive and royalty free.

Here's where the most recent atomic research activities have been announced:

Midwest—Chicago has two. A nuclear reactor costing about $500,000 is planned at Armour Research Foundation of Illinois Institute of Technology. Many industries will join in financing the project to investigate development of metals and alloys, wear and friction and other fields. The second project is for an experimental boiling water reactor at Argonne National Laboratory, which is operated by the University of Chicago. Sargent & Lundy, Chicago, will design the reactor and Allis-Chalmers Mfg. Co., Milwaukee, will provide power generation, heat transfer and special equipment for the power cycle. Development of competitive electric power from nuclear fuel will be the objective at this installation. Construction, scheduled to start in 1955, is expected to be completed in 1956.

In Columbus, O., Battelle Memorial Institute is undertaking a $1.5-million expansion of its present facilities. Plans call for a large cobalt-60 source and a swimming pool type reactor capable of operating at 1000 kw. The program will include experiments on power reactor cores, production of radioisotopes, activation of chemical reactions and studies on the effects of radiation on metals.

Feed Plants—S. R. Sapirie, manager of AEC's Oak Ridge operations, announces an expansion of AEC's feed materials production and processing plants. The $67-million program includes construction of a new facility in St. Louis and expansion of existing feed materials facilities at St. Louis, Paducah, Ky., and Fernald, O.

In the West, nine firms have formed the Rocky Mountain Nuclear Power Study Group. This is the sixteenth authorized under AEC's industrial participation program. With headquarters in Idaho Falls, Idaho, the new group will study, at its own expense, the economic and engineering possibility of a reactor for the western states.

Scientists, Engineers—A group of scientists and engineers met in Washington, D. C., and organized the American Nuclear Society. Its purpose will be to foster the integration and advancement of nuclear science and technology in all fields of nuclear research.

Atomic Power in 1957

This scale model, built for the Atomic Energy Commission, shows how the nation's first atomic-powered electric generating station at Shippingport, Pa., will look when completed in 1957. Under contract to AEC, Westinghouse's atomic power division is building the atomic reactor. The plant will be operated by Duquesne Light Co. It will design and construct the electric generating portion of the plant

Steel Profits Dip; Upturn Expected

	Net Earnings, Third Quarter 1954	1953
Allegheny Ludlum Steel Corp.	$546,886	$2,038,776
Armco Steel Corp.	10,167,361	10,042,784
Bliss & Laughlin Inc.	992,696*	1,603,624*
Colorado Fuel & Iron Corp.	1,027,096	2,483,797
Crucible Steel Co. of America	380,632	1,637,566
Detroit Steel Corp.	190,938 (L)	1,195,221
Eastern Stainless Steel Corp.	352,814	107,726
Granite City Steel Co.	1,049,814	2,264,329
Inland Steel Co.	6,875,977	8,371,796
Jones & Laughlin Steel Corp.	4,387,000	8,807,000
Pittsburgh Steel Co.	481,437	99,188
Republic Steel Corp.	10,302,001	14,048,033
Rotary Electric Steel Co.	13,539	548,559
U. S. Steel Corp.	44,323,860	61,706,264
Wheeling Steel Corp.	1,912,920	2,939,795
Youngstown Sheet & Tube Co.	4,474,003	8,057,691

*9 months ending Sept. 30.
(L) Loss.

STEELMAKERS' PROFITS and operations in the third quarter had something in common — both were down.

But there the drab note ends. Practically all reports of company earnings emphasized the business uptrend of the current quarter. The third period marked the lowest average operating rate, 64.1 per cent of capacity, since the strikes in mid-1952 and late 1949.

Some Exceptions—Compared to 1953, earnings for the quarter as well as for the nine months ended Sept. 30 are lagging considerably. But there are notable exceptions: Armco Steel Corp., Eastern Stainless Steel Corp., Pittsburgh Steel Co.

Armco's earnings for the quarter and nine-month period are above those of the like 1953 periods. They're due to operating economies stemming from efficient new facilities, according to Charles R. Hook, chairman. Pittsburgh Steel's third-quarter improvement over last year's was "primarily the result of the approximate completion of the company's 4-year, $65-million improvement and expansion program." Eastern Stainless officials credit their improvement to a "high degree of control exerted over company affairs." It is also enjoying the full benefit of its new steel melting furnaces, which make the company a producer rather than a steel converter.

Return on Sales — U. S. Steel Corp., nation's largest producer, reports that its nine-month profits of $138,174,974 this year represent a 5.7 per cent return on sales, matching the return it got in corresponding 1953 period.

Detroit Steel Corp. again reports a loss, but states its operating position continues to improve. President M. J. Zivian says that profitable operations are anticipated for the fourth quarter.

What's Ahead—Outlook for the current quarter is for a substantial increase. The operating rate is at an estimated 75 per cent of capacity, and it's expected to hover near that mark for the rest of the year.

Republic, whose new orders booked in the past two months exceeded those for any similar period since mid-1953, told stockholders:

"We expect no sudden boom but rather a gradual, sustaining increase . . . we believe good business will continue in 1955 and the steel operating rate will continue to rise."

Shops Get Tips on Bidding

Correct bidding is essential to the success of tool and die shops and similar subcontractors, Richard F. Moore, president of Moore Special Tool Co., told members of Connecticut Tool & Die Industries better management forum Oct. 18.

Mr. Moore suggested that job hours should be estimated first when quoting and that two men should help prepare the bid; one of them should be the shop foreman or man responsible for producing the job. He advised that quotations should always be based on an average man's production and that rates should not be shifted for each new order.

Other suggestions were that new shops should analyze their costs and keep detailed records to aid in future bidding. Sales, said Mr. Moore, should be broken down to find the most profitable or best customers in the type of business most valuable to the company.

It was emphasized that subcontracting operations must be flexible enough to be ready for serious business adjustments. To operate profitably on any given sales volume, the overhead rate should be geared as closely as possible to a set percentage of sales.

New Dimension for Television

A $50,000 television station at a military camp in the Azores may hold the answer to television for broad areas outside the United States that have been "blacked out" by the high cost of erecting and maintaining a station.

Developed by Electronics Division of Thompson Products Inc., Cleveland, complete equipment for the station was assembled by TP's Dage Television Division, Beech Grove (Indianapolis), Ind.

The small-area station was prepackaged, allowing the entire system to be disconnected in sections, later to be set up in minimum time. At a preview showing it was operating within 48 hours.

The Dage system has a peak visual output of 50 watts and is capable of producing a usable signal for about 10 miles. The Azores station may set a pattern for more to come, the Air Force indicated.

STEEL'S QUARTERLY SURVEY

Steel, Copper, Aluminum

CONSUMERS TELL WHAT HAPPENED IN THE LAST THREE MONTHS

	BETTER	SAME	WORSE
INVENTORIES . . .	H. R. carbon bars, over 1 in. H. R. carbon bars, under 1 in. H. R. alloy bars C. F. bars, under 1 in. H. R. sheets, strip C. R. sheets, strip Galvanized sheets Plates, light Structural shapes Manufacturers' wire Seamless tubing Copper wire, cable	C. F. bars, over 1 in. Plates, heavy Welded tubing Stainless sheets, strip Pig iron (foundry) Copper, brass mill products Aluminum products	

Inventory Shakeout Is Over: More Buying Ahead

LOOK FOR increased buying of steel, copper and aluminum for at least the next three months. STEEL's latest quarterly survey shows the inventory adjustment is nearing its end. Companies that have been living off a stockpile are coming back to market.

Indicative of a buying upturn is the intention of 65 per cent of respondents to hold inventories at present levels. With business improving, that means more buying to keep stocks up. Three months ago, almost half the users contacted said they planned further cutbacks. Now, those cutbacks have been made, and it is those firms that will supply the upward push.

Slow Rise—But don't look for a buying spree or a quick return to the boom times of early 1953. What upturn there is will be gradual. For one thing, less than 20 per cent of respondents said they intended to increase inventories during the coming quarter. And this gain will be balanced out by firms still working off excess stocks.

But there is some trend toward higher inventories. Since the last survey (Aug. 2, p. 47) there has been considerable movement out of the less-than-10-day group, with most users aiming for supplies in the 10-to-60-day range.

A Surprise—Somewhat surprising is the fact that the number of companies in the 3 to-6-month category has remained practically unchanged. And encouraging are their reports that they are quite happy to keep stocks at that level.

Significant in the brightening business picture is that more than three-fourths of the firms planning higher inventories expect to be in a better business position at the end of the quarter than they are now.

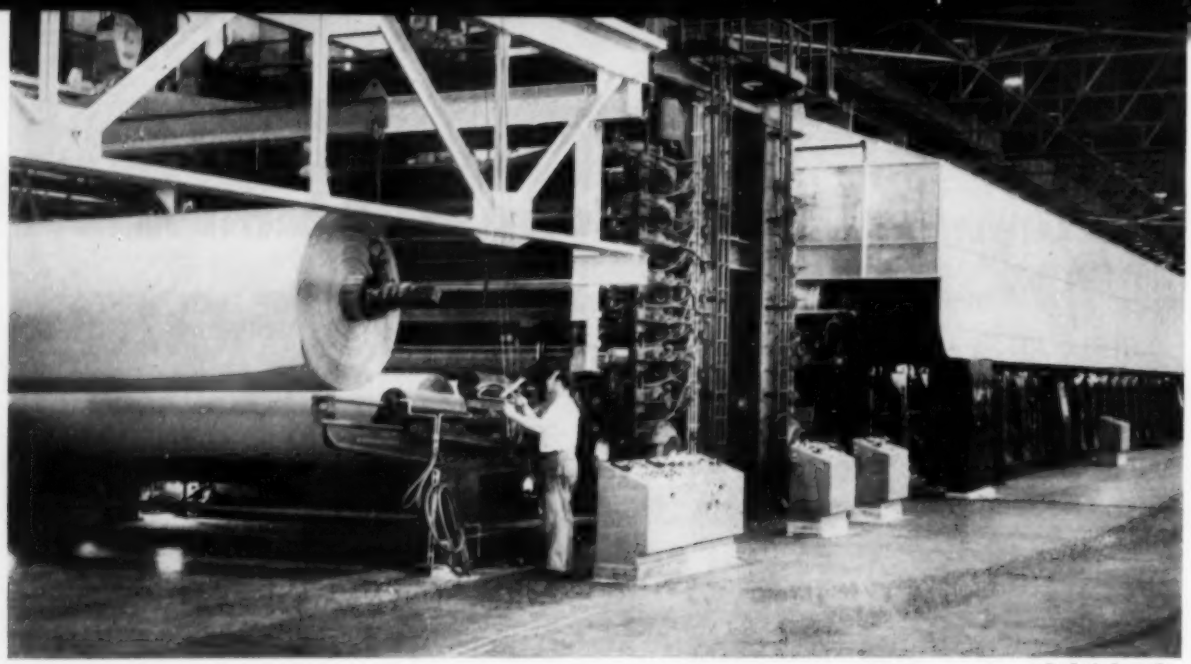
Trend Is Up—Beyond fourth quarter, the outlook is for a continuation of the gradual upturn now under way. Again, the majority of respondents expect relative inventory and business positions to be about what they are now.

Of respondents planning further inventory reduction, well over half think it will put them in a better position. About a quarter think lower stocks will leave them about where they are now. Only 2 per cent of total respondents feel they'll be in a worse position come year's end.

Good Delivery—About half of all respondents indicated having trouble with one or two items on their inventory. The difficulties were about evenly balanced between stock levels that are too high and too low. Galvanized sheets and structural shapes were giving most trouble, mostly because stocks were low.

On other items, most of the complaints were about specials. On standard sizes and analyses the situation is good. Easy delivery is helping, but, chances are, deliveries are going to tighten somewhat in the months ahead. Structural shapes, particularly in lighter sizes, and galvanized sheets were most frequently mentioned as having extended lead time.

Strangely enough, only a few users are feeling any pinch in copper and brass mill products and copper wire and cable. Most expect their stocks to be in pretty good shape through this quarter.



St. Regis Paper Co.

Papermaking machinery prospects are good because . . .

Expansion in Paper Means Metalworking Sales

This year papermaking and allied product manufacturing industries will spend $500 million on new plant and equipment in their continuing drive to keep up with growing demand

METALWORKING will wrap up some nice sales in paper this year.

Papermaking and allied product manufacturing industries will spend $500 million on new plant and equipment in 1954. About 400,000 tons of steel and other metals will be used in the paper industry's current expansion programs.

Resting on Paper—Reason for those expenditures is a constantly growing American appetite for paper: Per capita consumption of paper is now 391 lb compared with 318 lb in 1946 and 244 lb in 1939.

Production by domestic paper mills this year will approximate 26.2 million tons, only slightly less than 1953's 26.5 million tons.

Behind the News—Largest expansion program under way in the paper industry is that of newsprint production capacity. This program is due to be completed in 1955. Great Northern Paper Co., with three pulp and newsprint mills in Maine, is spending $48 million to increase production to 400 tons a day. Bowaters Newsprint mill, which started operations in Calhoun, Tenn., in July, 1954, is stepping up production from 130,000 to 150,000 tons per year. That plant cost $60 million and makes kraft paper as well as newsprint.

The Great Northern expansion includes two fast newsprint machines at Millinocket, Me., the first nearing completion. Both machines are being built by Beloit Iron Works, Beloit, Wis. The first machine to be completed will be a 276 in. unit, 375 feet long with a differential drive system permitting speeds up to 2500 feet per minute.

What Goes In—At least 100,000 separate parts will be used in the completed assembly. Slightly more than 600 tons of steel are fabricated into each of the machines such as Great Northern is getting. About 35 tons of stainless steel are used; most of it is fabricated into parts for the "wet end" of the machine.

The Beloit machines confirm trends toward more automatic control and higher speeds for paper mills. While this 276-in. unit is not the widest built, it is well beyond the width of most newsprint machines. The extra width combined with higher operating speed will result in more economical operation.

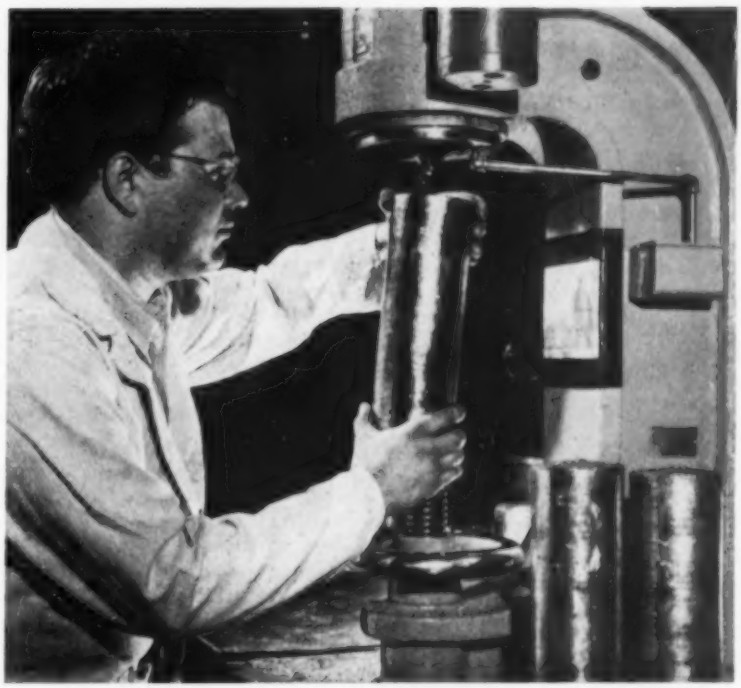
Other Equipment—Two digesters, incorporating new design features which utilize hydraulic operation, are being built for the Great Northern expansion. Digesters are steam cooking kettles for preparing chips for sulphide pulp or hard wood pretreatment. Both units are being made at the Quincy shipyard, Bethlehem Steel Co.

Though newsprint has the largest expansion presently afoot, the demand for all types of paper has been growing. Actually, the metalworking industry itself is a heavy user of paper — special papers such as vapor releasing, corrosion resistant wrapping sheets for shipping metal parts. Other large uses include milk containers, multiwall shipping sacks for bulk products, printing and publishing and fabricated finished paper products.

Spread Around—The paper producing industry is just as diverse as its markets: There are 768 paper mills and 303 pulp mills in the U. S.; they're in 488 town and cities and 38 states; they employ 270,000 people.

Zirconium Gets Set for the Big Time

The metal has arrived at point where titanium was a few years ago. Look for a 500 per cent increase in consumption over next five years



Westinghouse technician tests zirconium bar

ZIRCONIUM is stepping out of the shadow of its sister metal titanium. The metallic offspring of Florida sand has found recognition for its role in construction of nuclear reactors and fighting corrosion in industry.

Available in commercial quantities for only two years, zirconium has roused more than 600 companies to experiment with its possibilities. Experts predict a 500 per cent growth in consumption within five years.

Specialty—More expensive than titanium and having lower strength-to-weight ratio, zirconium offers better corrosion resistance in some uses. That, plus a high melting point (3350° F) and the ability to allow passage of slow neutrons (and sustain a chain reaction in atomic ovens) have boomed the metal's development. The AEC is the largest consumer of hafnium-free zirconium.

As an alloy constituent, zirconium's use with ferrous and nonferrous metals is growing (see p. 53). It can be substituted for manganese in steel and adds strength at high temperatures to sand-cast magnesium-thorium alloys. Zirconium sponge sells for $10 a lb, compared with just under $5 for titanium sponge.

New Product—Mill products are in their first year of commercial availability. Plate costs $27 a lb, hot rolled strip $28, cold-rolled strip $35, and forged or hot-rolled bars $27.

Essentially a metal of specialized uses, commercial zirconium is competitive with tantalum (which sells for $39 lb in sheets, rods.)

Uses—It is being used, by itself or clad on steel, as repair plugs in chemical tanks, in production of sodium metal, as surgical plates.

In powder form, zirconium's powerful affinity for oxygen and nitrogen in high temperature ranges enhances its suitability as a "getter" or stabilizer of gases in vacuum tubes and for hastening combustion of flash powders and explosives.

Sources—The Bureau of Mines was once the sole supply source of metallic zirconium and is still by far the largest sponge producer. Its Albany, Oreg., plant produced more than 280,000 lb of sponge in 1953, plus nearly 7000 lb of clean hafnium sponge, which usually comes in combination with zirconium. Under a five-year AEC contract, Carborundum Metals Co., Akron, N. Y., is producing 150,000 lb of sponge annually at less than $15 lb. Kroll-process zirconium is sold by Titanium Alloy Mfg. Division, National Lead Co.; it is produced at Niagara Falls, N. Y.

Titanium rolling techniques must be modified in zirconium processing, and industrial output of fabricated forms is still spasmodic. Problems in extruding the metal are still being encountered. Allegheny Ludlum, producer of strip, small flats and wire, feels that any product normally produced on steel mill equipment will be possible. Because of chemical and metallurgical resemblances to titanium, machining methods can probably be adapted satisfactorily to zirconium. Success has been reached in welding by inert gas and resistance techniques.

Growing Up—Four years ago zirconium was thought of mainly for flash bulbs and vacuum tubes. Today, industry men, on seeing the daylight of new applications, can visualize markets they didn't think possible only six months ago.

By E. C. KREUTZBERG Washington Editor

Industry To Be Better Informed on BDSA Activities

IS THERE undue secrecy in the activities of the Business & Defense Services Administration?

If there is, there won't be. BDSA Administrator Charles F. Honeywell is studying ways to publicize the agency's work more effectively.

How To Start—As a starter, he is arranging for an increased press run of the minutes of industry conferences. Copies will be available to all interested trade association executives and industry members. Mr. Honeywell will try to keep correspondents of business papers closely informed, so they, in turn, can hand more BDSA information on to their readers.

Cause for concern over the lack of knowledge about BDSA among the leaders of industry is twofold: 1. The great majority of industrymen have been deprived of valuable information brought out at BDSA conferences. 2. Without direct evidence of the fine job BDSA does for industry, industrymen have tended to regard the agency as just another bureaucracy that could be eliminated.

Substitute for Perfection—Ideally, BDSA-industry conferences should be attended by all members of the industry involved. That wouldn't be feasible since attendance could run into the thousands.

Mr. Honeywell hopes that widespread distribution of industry conference minutes will prove a beneficial substitute for industrywide meetings.

What Goes On . . .

As an example of the useful information industrymen will be able to get out of BDSA conference minutes, take the recent conference with the mechanical power transmission equipment industry.

The group was told of plans for expanding the Defense Materials System from military production to all production in an all-out mobilization. It was told that under such conditions materials controls would be imposed on end-products rather than on the users of materials for components. Manufacturers of components would be able to operate in a relatively free market for materials.

The conference was told that components manufacturers also will be assigned a symbol designation to identify orders for materials going into components. The CMP practice of estimating tonnage requirements and then requesting allotments will be outmoded. The new method is intended to prevent components with a small dollar value from being major bottlenecks to the completion of badly needed pieces of equipment.

As for supplies of critical materials, BDSA officials told the conference that supply should meet demands. "Even in the case of nickel, an adequate supply is anticipated in several years as a result of the great expansion in capacity. In the meantime, output from the expanded capacity is being stockpiled. Alloys, generally, are in increasingly better supply."

Director BDSA Division

On leave as vice president and general manager of G. A. Gray Co., Cincinnati, is Graham Evans Marx, director, Metalworking Equipment Division, BDSA. Niels A. Olsen, Alexandria, Va., is deputy director of the Metalworking Equipment Division

Added Information . . .

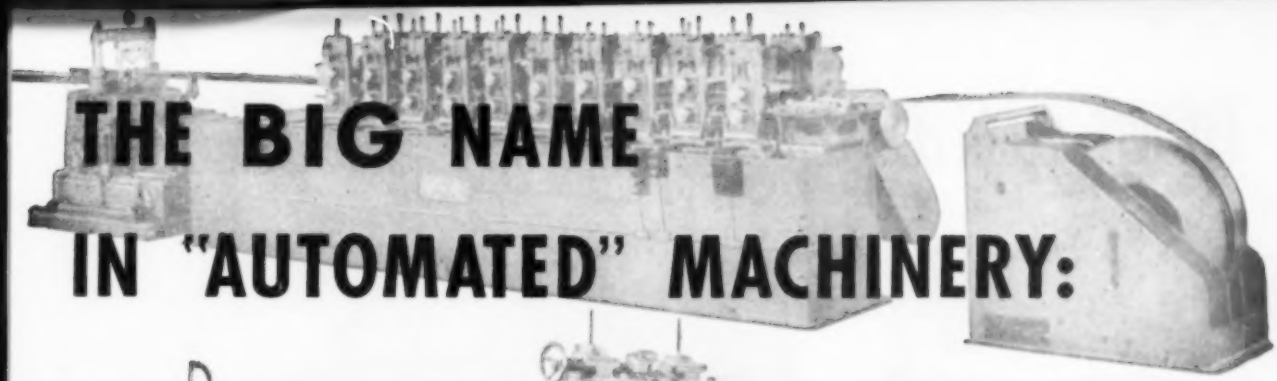
The above information alone would be well worth the price of a ticket to Washington or the price of a set of minutes of the meeting. But there is more.

The group learned of a method to help small subcontractors get equipment when the prime contractor hesitates to support a request for such assistance. Under the new plan, subcontractors would have tools allotted to them through certification by the BDSA General Components Division. The group also learned of help the government will furnish manufacturers to enable them to plan more efficient distribution over larger markets.

Half a Loaf . . .

Conversely, industrialists who attended the meeting in question were able to give helpful information to Washington officials. Unrealistic tolerances, they said, needlessly complicate the procurement of gears and reduce the potential procurement area. Army and Navy Ordnance were called on to withdraw from the manufacture of fine-pitch gears. Suggestions were made for standardization of purchasing forms, for simplification of price negotiation and renegotiation procedures.

Industrywide meetings would still be the ideal form of transmitting this information. Mr. Honeywell's program for spreading the results of small meetings to all industry men across the country is a good compromise.



THE BIG NAME IN "AUTOMATED" MACHINERY:

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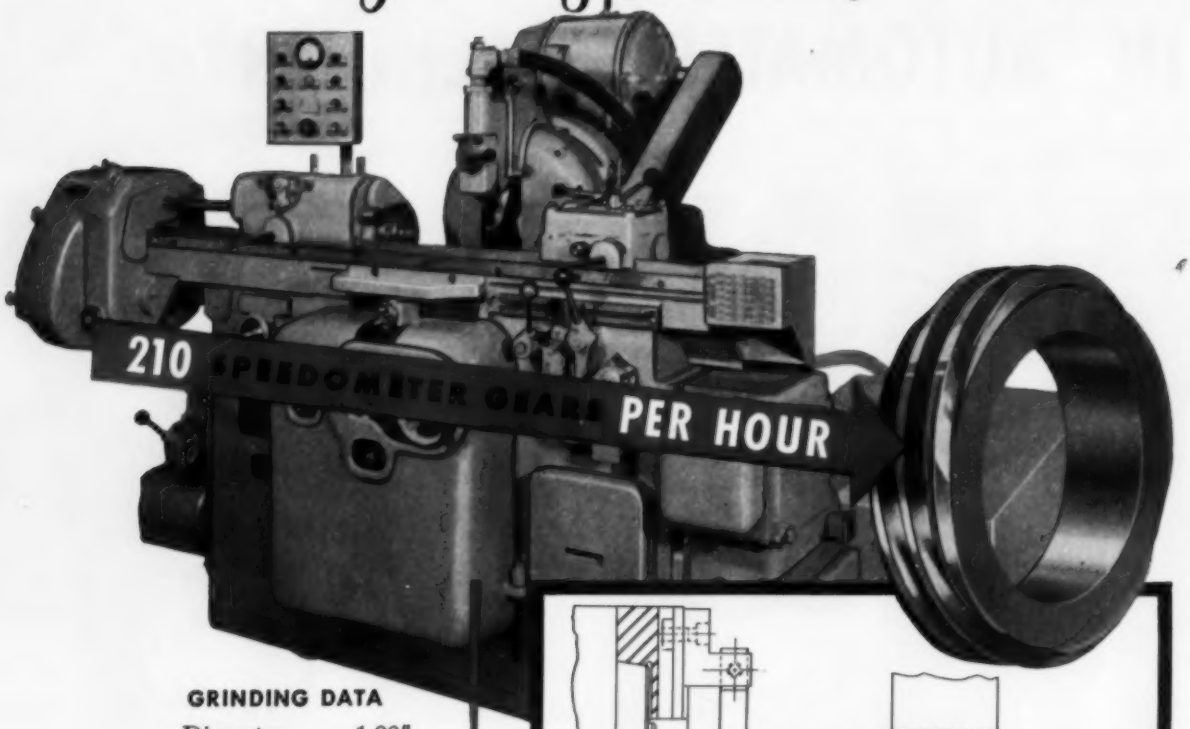
- FORMING MACHINES
- PRESS FEEDS
- DRAW BENCHES
- TUBE MILLS

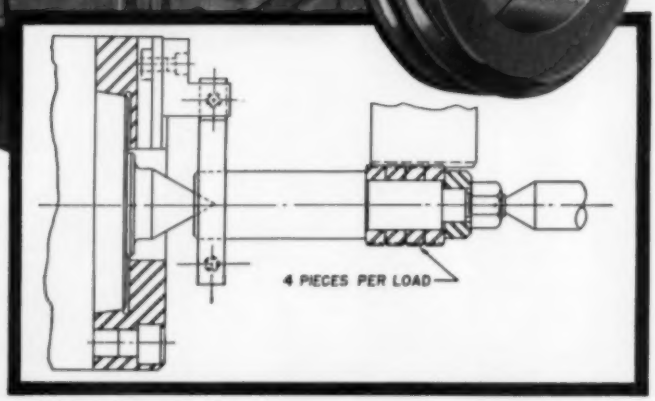
The McKAY MACHINE Company
YOUNGSTOWN, OHIO

McK

ENGINEERS AND DESIGNERS OF
EQUIPMENT FOR THE AUTOMOTIVE,
FABRICATING AND STEEL INDUSTRIES

Multi-ribbed grinding BOOSTS production!





GRINDING DATA

Diameter . . . 1.93″
Pitch . . . Approx. 6
Form . . . Worm
Thread . . . 4-Start
Lead . . . .6797″
Helix Angle . . . 6° 37′
Thread Length . . . 1⅞″
One way grinding
Stock removed . . . .089″
Crush Dressing of Wheel

AUTOMATIC WORK CYCLE

Automatic In Feed
Automatic Sizing
Automatic Wheel Trueing
Automatic Lubrication
Automatic Coolant System

These four-start worms are ground — four at a time in a single pass — from the solid. A multi-ribbed wheel is crush-dressed every 48 pieces (twelve arbor loads). The finish on these parts — and the rate of production — exceed those possible by any other methods.

This is a typical example of how the FULLY AUTOMATIC WORK CYCLE of Jones & Lamson Automatic Grinders assures rapid metal removal, accuracy of form and quality of finish.

Because of today's challenge for increased production at a higher degree of accuracy, Automatic thread and Form Grinders are replacing other methods for producing this class of work.

On the basis of increased quality and *more production per labor hour*, we invite the opportunity to improve upon your existing methods.

JONES & LAMSON

Machine Tool Craftsmen Since 1835

JONES & LAMSON MACHINE CO., 517 Clinton St., Dept. 710, Springfield, Vt., U.S.A. J&L MACHINE TOOL DIV.

Cameron's Allen: 'Management Is Creative'

"I ENJOY a management job because you apply the same approach to it as you do to inventing."

As an inventor and management man, Herbert Allen speaks with authority. The vice president and general manager of Cameron Iron Works Inc., Houston, holds more than 100 oil tool patents, and for many of his 24 years with the maker of oil well specialties, he has been in the engineering and inventive side of the business. Since 1950, he has spent more time in general management.

Parallel—"And that's creative, too," he says. To questions of personnel, diversification and expansion, he applies the same techniques that he has already used in problems about blow-out preventers, mud valves and many other oil tool developments he has had a hand in. "I mull over a difficulty until I get sick of it. Then I drop it; let it simmer. In due course and without warning or conscious effort, a solution or new approach comes to mind. Sometimes the process must be repeated."

His major management job at Cameron has been to develop supervisory personnel who can get results from its unique facilities—a plant integrated from electric steelmaking units to forge presses and finishing equipment. "We have a lot of bright young men here," says Mr. Allen. "With our men and facilities, we can do almost anything. We don't want to chase too many rabbits. But if we can find a deer, we want to go after him."

Diversification — Cameron's resources have sent it into unusually wide diversification. "We do it as a business hedge," points out Herbert Allen. In addition to its basic oil tool business, it has long been in ordnance and contract forging work and has just established a Camair Division. Each month, starting next January, it will be converting four Ryan Navions into twin-motor planes for the flying executive.

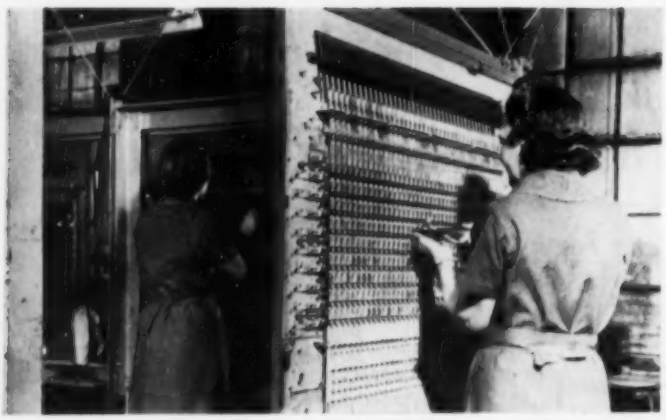
Herbert Allen has been tackling problems all his life. One of the first was to put himself through Rice Institute. He did it during his first two years by working 18 hours a day. But even that didn't earn enough money, so he had to leave college for a year while he worked at Lufkin Foundry, Lufkin, Tex. He re-entered Rice in 1927 and was graduated in 1929.

Of Things To Come—One of his part-time jobs at the Institute was working on a program to improve methods of drilling oil wells. That job first indicated his inventive bent.

He still finds time to invent, even as general manager. One of his most recent developments is a more compact blow-out preventer. As he says, "There are opportunities everywhere."

On Nov. 2 Americans will be clicking the levers of . . .

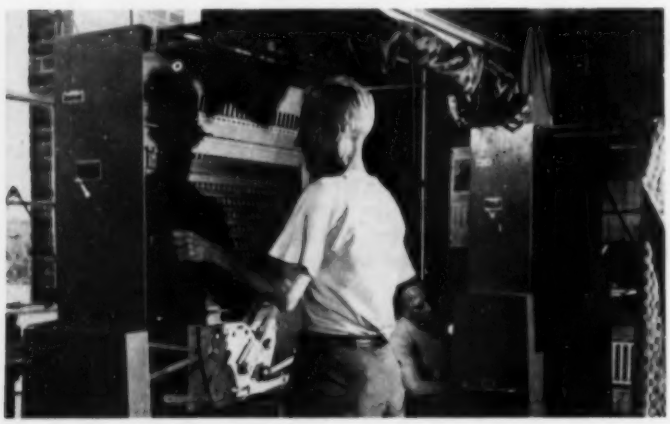
Voting Machines: The Honest Count



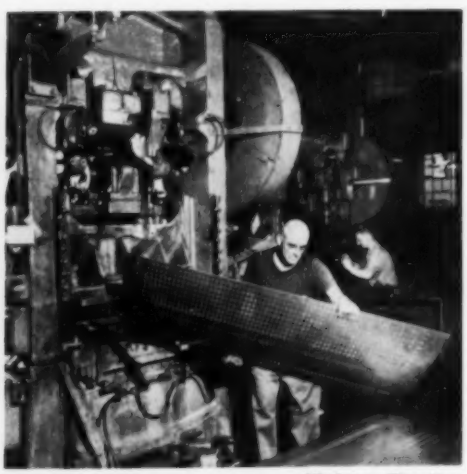
Fixed on racks, voting machines are assembled in a long, detailed operation. Each machine contains more than 20,000 small parts

THOMAS EDISON invented the voting machine, but he didn't reckon with the politics of the day. When he offered his "Electrographic Vote Recorder" to Congress in 1869, the solons gave him the cold shoulder. A second machine, introduced by Jacob Myers, made its appearance in Lockport, N. Y., in the election of 1892.

Today, the voting machine is a familiar sight to politicians and voters alike. Most municipalities require one machine for every 500 to 600 voters. Larger machines handle names of 40 candidates and nine parties.



When a voting machine is completed it is "rung up" in a test run. The counters can register 999 votes for each candidate or issue



All photos: Three Lions

Panels for the machines are stamped at Automatic Voting Machine Co, Jamestown, N. Y.

Down in its part of the country, most metalworking companies depend for their major volume directly or indirectly on oil, gas, chemicals or farming. Not so with Rowe Machinery of Dallas. It finds . . .

'It's an Asset To Be from Texas'

A DALLAS, TEX., manufacturer went on a trip up north to investigate equipment to handle coil stock.

"And I suppose you have already looked into Rowe's line?" he was asked on one occasion. "Rowe? Well, I've heard the outfit is way out of the way somewhere, so I doubt if I'll get to it," the Dallas man answered.

Geography—Rowe Machinery & Mfg. Co. Inc. is in Dallas and it eventually sold its fellow townsman coil cradles, a straightening machine and accessories for handling coil stocks. Rowe's president, Thomas Gray, and vice president-sales manager, R. E. Reed, believe their company is the most unusually located firm in its line in the U. S.

"For a while," says Tom Gray, "we had no business at all from Dallas companies; it's not surprising that some firms never knew we were in their own backyard." Rowe has a number of customers in Texas today, but 80 per cent of its business is around the Chicago area or east of there.

Why Dallas?—Rowe is in Dallas because the late M. H. Rowe started a contract tool and die shop there in 1939. War-generated business had declined seriously by 1949, so the company began to develop its present line. It soon dropped the job tool and die work because new business prospered. Sales in its fiscal year that ended May 31, 1951, were $334,000, $367,000 in 1952, $511,000 in 1953 and $722,000 in 1954. Volume for fiscal 1955 will at least equal the 1954 level, may surpass it.

"We run into no serious problems because of our location," says Tom Gray. Freight is a minor consideration in capital equipment of Rowe's type. Dallas is 2½ hours away from Chicago by air, 5 hours from New York and Cleveland. "We can cover our territories as frequently as competitors," says R. E. Reed.

Competition — Despite its location, Rowe makes fast delivery one of its competitive selling points. It concentrates on standard equipment and has the components on hand for rapid assembling. On standard cradles it can ship the day after the order is received.

Rowe has only 26 employees, but they've been working 40 hours a week or more all year. Its introduction earlier this year of new automatic straightening and feeding machines has helped volume.

The company has expanded twice since 1950 and has 11,500 sq ft of production area. It's dreaming of expanding more—but in Dallas. Tom Gray, a native of the Lone Star state, says, "It's more of an asset than a liability to be from Texas."

Big Machines Stretch Aluminum

Trend towards weight-saving construction in military aircraft gets a new boost as Navy awards Reynolds Metals Co. a $5-million contract for machinery to fabricate large, single piece structural parts for jet aircraft.

Machines include a 15-million-lb capacity aluminum plate stretch leveler, two aluminum skin milling machines and a 6000-ton capacity extrusion press. They will be installed at Reynolds' McCook, Ill., and Phoenix, Ariz., plants. The Navy will retain ownership of all the special machinery used for government contract work in fabrication of aircraft parts.

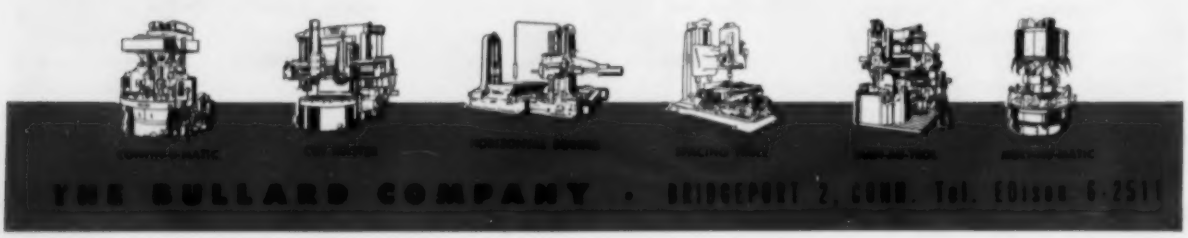
you have PRECISION at your finger-tips with a BULLARD SPACER

A call to your BULLARD Representative will convince you of the savings a Bullard Spacer will effect in your manufacturing methods, or write to...
The Bullard Company
Bridgeport 2, Connecticut

In plant after plant, in many diversified industries, The Bullard Spacer, day after day is convincing management and shop people alike, that where precision counts it is a "natural."

At the San Diego Division of Convair, a machine shop Superintendent says: "We have found the Bullard Spacer very useful in our work. The machine is simple to operate. It eliminates the necessity of zeroing to a set position and there is no chance for error, which is important when you make accurate parts for airplanes."

Accurate and precision drilling, reaming or tapping to exacting standards on difficult pieces without the high cost of jigs or fixtures, is maintained with a Bullard Spacer.



By FLOYD G. LAWRENCE *Detroit Editor*

Automen Save with High Strength, Low Alloy Steels

They're using them increasingly to save weight and fight corrosion. The steels can be used in the as-rolled condition, a situation not generally true of steels containing alloying elements

DETROIT

HIGH STRENGTH, low alloy steels are assuming the proportions of a minor wonder drug in the auto industry.

During 1953 automakers consumed 323,452 tons of these steels (see table) which comprise a group of 15 or so chemical compositions made by nearly as many steel producers. That was 43 per cent of total production; from 1952 to 1953 their use by the auto industry increased 65 per cent.

Wide Range — Because these steels are proprietary, says Charles M. Parker, American Iron & Steel Institute vice president, attempts to standardize on one or two chemical compositions have been unsuccessful. Yet the fact that there exists a group of steels which vary substantially in chemical composition while meeting a standard set of mechanical property values and which can be fabricated by standard methods gives the consumer an unprecedented latitude in steel selection. All are outstanding in the field of weight reduction, the purpose for which they were created, Mr. Parker notes.

In most cases the total alloy content, including manganese, will be around 2 to 3 per cent, with the major functions of the alloying elements being to raise strength and to enhance resistance to corrosion. All high-strength low-alloy steels have been designed to be used in the as-rolled condition, a situation not generally true of steels that contain alloying elements. Only in unusual circumstances, says Mr. Parker, is heat treatment by the fabricator needed.

Alloys—The most common alloying elements used in high strength, low alloy steels in alphabetical order are: Chromium, copper, manganese, molybdenum, nickel, phosphorus, silicon, titanium, vanadium and zirconium. Regardless of combinations used, a steel manufacturer aims to meet these minimum mechanical property values: Tensile strength, 70,000 psi; yield point, 50,000 psi; elongation in 2 in., 22 per cent for thicknesses ½ in. and less.

Coincidentally, notes Mr. Parker, other properties, such as corrosion resistance, abrasion resistance, strength in shear, endurance limit, notch toughness and strength at high and low temperatures are enhanced. The yield point of high strength, low alloy steel is about one and one-half times that of plain carbon structural steel.

Strong—The modulus of elasticity of high strength, low alloy steels is 29 million psi, a factor which Mr. Parker says is exceedingly important in truck and trailer life. Few failures can be attributed to static overload.

In one instance cited, high strength steels saved 765 lb in the weight of a gasoline truck tank, 906 lb in the trailer tank. This added up to the equivalent of 257 gallons hauled on every trip

Uses—Among other uses for high strength, low alloy steels, given by Mr. Parker, are rim sections for cars and trucks, mufflers, fuel tanks, fan blades and engine mounts. Such uses are suggested not only by the high tensile properties but also by the corrosion resistance factors and a combination of the two, called corrosion fatigue. Pointing out that a great deal remains to be learned about the latter, Mr. Parker says that the effect of corrosion and fatigue acting together is greater than either acting alone. In one series of tests high strength, low alloy steels have shown failure values of 37,000 psi when repeatedly stressed in sulphide solutions, a figure exceeded only by stainless steel.

Paint adheres well to these materials. They can be prepared for painting by ordinary degreasing methods. Also the finish coat often is applied directly without the use of a primer.

Equipment — Although high strength low alloy steels have higher yield strength, they can be proc-

HOW AUTO INDUSTRY USES HIGH-STRENGTH LOW-ALLOY STEEL

(tons consumed in 1953)

Structural Shapes—2342

Bars, Bar-Size Shapes—802

Plates—18,950

Hot-Rolled Sheets—213,569

Cold-Rolled Sheets—74,736

Hot-Rolled Strip—9282

Cold-Rolled Strip—3771

(Material in this department is protected by copyright, and its use in any form without permission is prohibited.)

essed easily by standard methods on conventional equipment. The need for higher applied force on dies is often obviated by the fact that lighter gages may be used than with plain carbon steels. But greater springback of the materials must be considered and greater die clearance and radii of bends may prove necessary.

Also a strong factor in favor of the materials is their high weldability.

Auto engineers seeking lighter weight and higher corrosion resistance have high strength, low alloy steels well up on their list of helpful materials these days.

Chevrolet for 1955

As shown in the accompanying photo, the styling of the new Chevrolet speaks for itself. Not a few people will feel that the Chevvie is the prettiest automobile on anybody's highway in the coming year. The thing you won't realize until you slip behind the wheel of this landbound hydroplane is that the Chevrolet handles and goes in league with its looks.

Lowered in sedan models about 2½ in. over-all and in station wagons as much as six in., these cars are underpinned by a new suspension that will take them through curves in Corvette style.

Chevrolet lines in 1955 will sport new bodies, chassis design and choice of engines. Here is the Bel Air sport coupe

A new 180 horsepower engine powers the 1955 Pontiac Star Chief four-door. Another feature is the panoramic windshield

Also introduced is the "first V-8 engine offered on a Chevrolet in 35 years." Dubbed the Turbo-Fire V-8, this twister delivers 162 hp with an optional power package upping the output to 180. Other features include a 12-volt electrical system, more integrated body and frame design, optional overdrive for the first time, tubeless tires and recirculating ball steering.

This car puts plenty of fun back into driving and plenty of safety as well.

Pontiac for 1955

Billed as embodying more engineering advances in mechanical make-up than any model since introduction of the first Pontiac car in 1926, the new car offers 109 features for the year ahead.

Most obvious is the Strato-Streak V-8 blithely predicted in this column for last year's cars, bowing in with 180 hp, and, consequently, an awesome power to weight ratio. This engine is a most interesting design, incorporating a reverse-flow gusher valve cooling system, which feeds water directly from the radiator to the cylinder head and then to the cylinder block. The advantage here is that the head is the hottest part of the engine, thus the flow tends to equalize temperatures throughout the engine.

Everything mentioned above about the suspension of the new Chevrolet also is characteristic of the Pontiac with virtual elimination of nose-dive in sudden stops and astounding cornering.

There's no doubt about it, the Indian's got on his war paint for 1955.

Auto, Truck Output

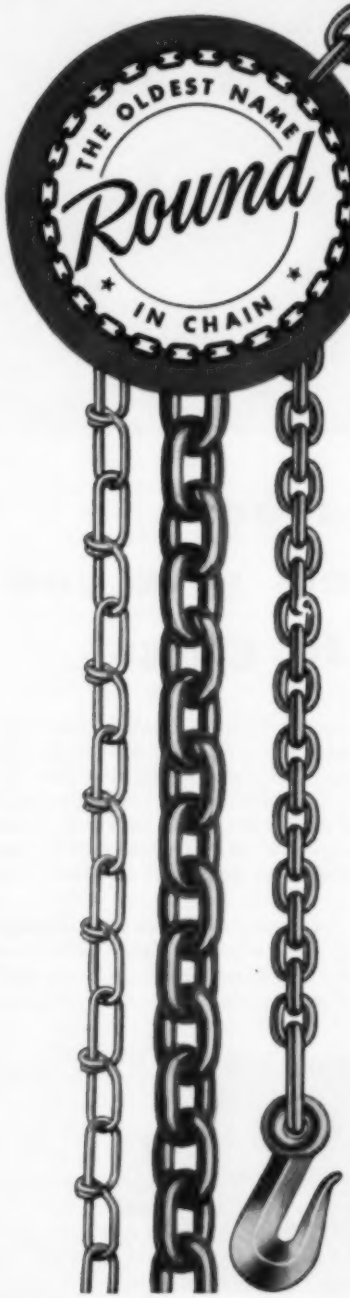
U. S. and Canada

	1954	1953
January	594,789	614,000
February	573,801	628,017
March	672,485	752,149
April	676,233	782,491
May	621,249	684,843
June	623,732	713,778
July	543,534	756,592
August	523,785	640,186
September	364,443†	605,228
October		651,153
November		457,852
December		529,588
Total		7,815,877

Week Ended	1954	1953
Sept. 25	71,017	140,953
Oct. 2	84,110	142,824
Oct. 9	81,610	148,779
Oct. 16	59,511	152,743
Oct. 23	61,680	149,794
Oct. 30	81,000*	145,311

Source: Ward's Automotive Reports. †Preliminary. *Estimated by STEEL.

THE NEW LINK REPUBLIC STEEL IN CHAIN...



REPUBLIC *Round* CHAIN

Round, the oldest name in chain, is now linked to Republic Steel, producer of the world's widest range of steels and steel products.

This integration of Round's chain manufacturing facilities with Republic's experience in producing all types of steels assures you of the highest quality chain products.

Republic will stress service and quality which have been characteristic of Round chain products for over 85 years. REPUBLIC Round CHAIN is the only chain where quality can be controlled from ore to finished product.

Your orders for REPUBLIC Round CHAIN will be handled promptly and efficiently through a central sales organization. Strategic coast-to-coast location of manufacturing plants and warehouses assures you of prompt service and delivery.

The Republic Round Chain Division manufactures a complete line of welded and weldless chain for every industrial, farm and home requirement.

For additional information on sales and service, write:

REPUBLIC STEEL CORPORATION
Round Chain Division
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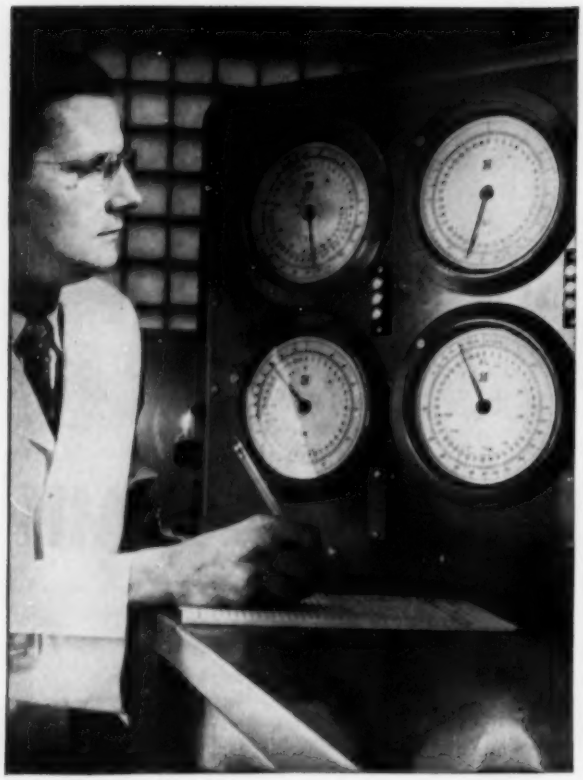
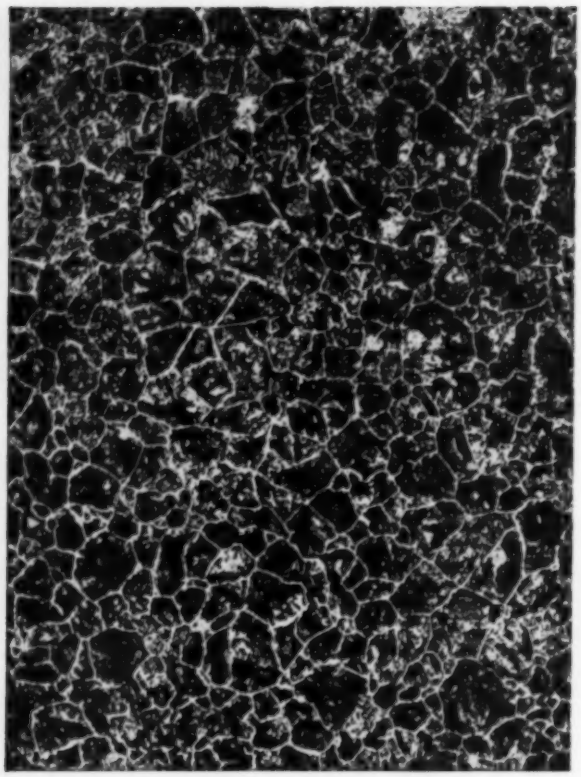
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York

REPUBLIC *Round* CHAIN

Other Republic Products include Steel Sheets, Strip, Bars, Wire, Pig Iron, Steel and Plastic Pipe, Bolts and Nuts, Tubing





Meet two of the reasons why TIMKEN® forging steels give you uniform, high-quality forgings

THE man on the left helps assure you of uniform composition in every Timken® steel forging bar. With this spectrometer, he can tell the exact composition of a melt in just 40 seconds. Results are flashed back to the furnace so the melter can maintain constant control of the heat analysis up to the instant of pouring.

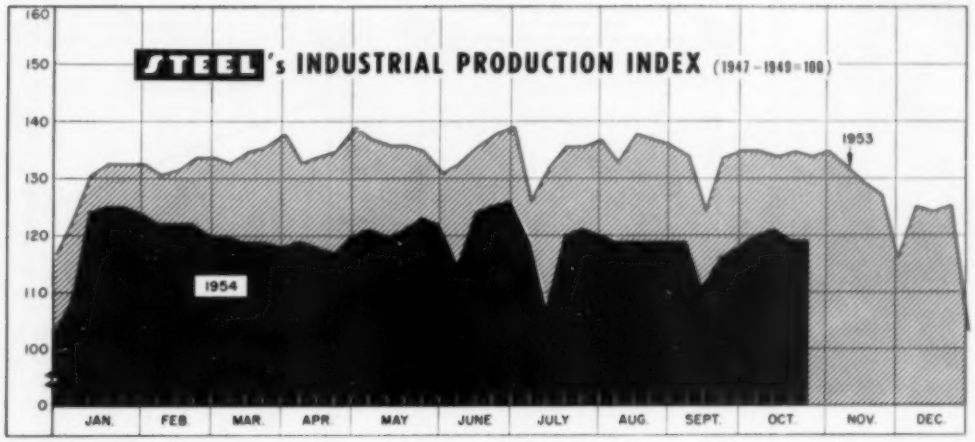
The photomicrograph at right shows the uniform grain size of the Timken forging steels. Uniform grain size after heat treatment is assured by spectrometric or microscopic examination of every heat. The result—you can be sure that forgings made from Timken forging steels have uniformly high ductility and resistance to impact.

But that's only part of the story. You can hold rejects to a minimum because we condition the steel to fit your particular forging requirements. And you save steel because the good dimensional tolerances of Timken forging steels produce uniform weight multiples with a minimum of steel lost in flashings. You even have fewer furnace adjustments because Timken forging steels respond uniformly to heat treatment.

For help in improving the quality of your forgings and cutting production costs, write: The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



* Week ended Oct. 23.

Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 11%.

Small Firms Spark Rise in Equipment Buying

MODERNIZATION, big industry's magic word and guidepost for years, has sifted down to the smaller firm and is sparking a revival among equipment makers. Particularly benefited are machine tool and other plant machinery makers.

Many small plants lagged behind in bringing their machinery up to date. Now they're making up for lost time.

Tidy Sum—It's all part of the "cut costs to get competitive" movement. Small plants that haven't bought machine tools for years are coming back into the market. It's true that most of them are buying only one or two machines, but the aggregate is adding up to some mighty pleasant ringing on tool builders' cash registers.

Multipurpose tools are in most demand; sales of "one or two job" tools and "elephant" tools are falling off. The long expected big government order may revive demand in those categories, but tool builders aren't excited—that order has been talked about so long that they got tired of waiting and drummed up private business to take its place. It will be an added shot in the arm, though, when it comes (See STEEL, Oct. 25, p. 97).

Different—And don't count the big firms out of the market, either. Many are buying a machine here and there to improve specific operations. It's a lot different from the war years, though, when whole plants were tooled up at once. Still, it looks like machinery producers are off the ropes for a while.

Tax law changes haven't directly helped sales much, but that may change as firms get more familiar with them.

Signs of the Times—Reflecting the upturn in orders is the National Machine Tool Builders' Association new order index for September. It was 179.8 (1945-1947 = 100) for that month, up

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,772	1,769	2,132
Electric Power Distributed (million kwhr)	9,105[1]	9,117	8,306
Bitum. Coal Output (daily av.—1000 tons)	1,375	1,375	1,586
Petroleum Production (daily av.—1000 bbl)	6,160[1]	6,196	6,220
Construction Volume (ENR—millions)	$323.2	$259.4	$268.9
Automobile, Truck Output (Ward's—units)	61,680	59,511	149,794
TRADE			
Freight Car Loadings (unit—1000 cars)	710[1]	721	804
Business Failures (Dun & Bradstreet, no.)	187[1]	152	185
Currency in Circulation (millions)[3]	$30,055	$30,159	$30,305
Dept. Store Sales (changes from year ago)[3]	+1%	−2%	−5%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$21,276	$15,769	$19,392
Federal Gross Debt (billions)	$278.8	$278.8	$273.1
Bond Volume, NYSE (millions)	$18.2	$14.9	$14.4
Stocks Sales, NYSE (thousands of shares)	10,454	10,587	6,452
Loans and Investments (billions)[4]	$84.7	$84.6	$78.9
U. S. Gov't. Obligations Held (billions)[4]	$37.4	$37.6	$31.3
PRICES			
STEEL's Finished Steel Price Index[5]	194.53	194.53	189.38
STEEL's Nonferrous Metal Price Index[6]	218.6	218.9	203.2
All Commodities[7]	109.4	109.8	110.0
Commodities Other Than Farm & Foods[7]	114.6	114.6	114.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1954, 2,384,549. 1953, 2,254,459. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1839=100. [7]Bureau of Labor Statistics Index. 1947-1949=100.

Your best

cancer insurance...

"LIFETIME" POLICY... See your doctor *every year* for a thorough check-up, no matter how well you feel.

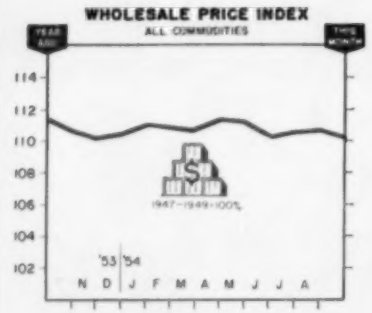
"DAY-TO-DAY" POLICY ...See your doctor *immediately* at the first sign of any one of the seven danger signals that *may* mean cancer (1) Any sore that does not heal (2) A lump or thickening in the breast or elsewhere (3) Unusual bleeding or discharge (4) Any change in a wart or mole (5) Persistent indigestion or difficulty in swallowing (6) Persistent hoarseness or cough (7) Any change in normal bowel habits.

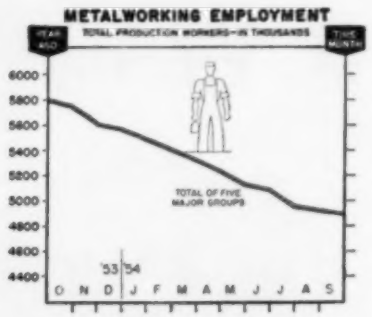
Many cancers can be cured, but only if properly treated *before* they have begun to spread or "colonize" in other parts of the body.

For *any* information about cancer just call the American Cancer Society or write to "Cancer" in care of your local Post Office.

American Cancer Society

THE BUSINESS TREND





	1954	1953	1952
Jan.	110.9	109.9	113.0
Feb.	110.5	109.6	112.6
Mar.	110.5	110.0	112.3
Apr.	111.0	109.4	111.8
May	110.9	109.8	111.6
June	110.0	109.5	111.3
July	110.4	110.9	111.8
Aug.	110.5	110.6	112.2
Sept.	110.0	111.0	111.7
Oct.	....	110.2	111.1
Nov.	....	109.8	110.7
Dec.	....	110.1	109.6

U. S. Bureau of Labor Statistics.

Charts Copyright 1954 STEEL.

Production Workers—Five Major Groups In Thousands

1953	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
Sept.	1,129	939	1,262	941	1,520
Oct.	1,112	934	1,254	933	1,507
Nov.	1,088	902	1,240	913	1,449
Dec.	1,074	875	1,238	883	1,487
1954					
Jan.	1,049	874	1,230	855	1,470
Feb.	1,027	864	1,220	839	1,435
Mar.	1,010	852	1,202	827	1,400
Apr.	991	840	1,187	811	1,340
May	976	833	1,165	791	1,342
June	983	831	1,151	776	1,324
July	969	809	1,108	765	1,277
Aug.*	969	819	1,097	783	1,237
Sept.*	969	819	1,101	807	1,183

*Preliminary.
U. S. Bureau of Labor Statistics.

55 points from a July low of 124.7. At the same time, the index of shipments rose 10 points.

Another new order index heading upward is that of the American Supply & Machinery Manufacturers' Association. For September, it was 148.11 per cent of the July, 1948, base. That's considerable improvement over July's 119.35, the lowest since mid-1950.

Harvest Time — Modernization may prove the open sesame to farm machinery makers, too. Sales have been off considerably from last year; production has been off even more. Now, many producers are forecasting an upturn in 1955; for some it has started already.

Cost cutting is again a strong factor. One new tractor development alone, says John L. McCaffery, president of International Harvester Co., will make it possible for a farmer to plow up to 2 acres more a day using less fuel and with much less wear and tear.

Golden Opportunity . . .

Electrical contractors have a lush field just waiting for them in home, institutional and commercial building modernization, points out Don B. Clayton Sr., president of the National Electrical Contractors Association. He estimates that the field could be worth as much as $20 billion. One of its big advantages is that it would provide work to smooth out peak and valley work cycles.

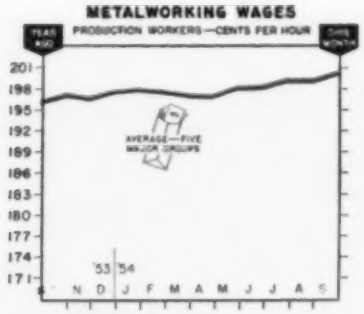
But, he says, homeowners have to be sold on the idea that it's their wiring that's the cause of poor service from appliances rather than the appliances themselves or the electric company.

In Black and White . . .

But inadequate wiring or no, people are buying still more appliances. Washers and dryers are getting a big play at the wholesale level, but on the retail scene television is in the spotlight. There's static in the picture in some locations, but, generally, sales are up. And so's production.

Lower prices are helping to keep sets moving. Sales are good in areas where TV is relatively new. Business is also good in places where TV is relatively old. Sets are wearing out, and a developing trend toward second sets is keeping demand up. Trouble spots are the in-between locations where TV is a couple of years old.

Color TV is in a sort of chicken-

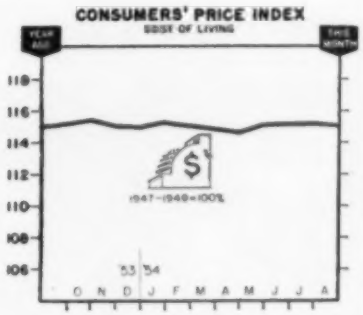


Production Workers—Five Major Groups
(cents per hour)

1953	Prim. Mtls.	Fab. Prod.	Mach- inery	Elec. Mchy.	Trans. Equip.
Sept.	213	186	198	178	209
Oct.	208	187	199	178	210
Nov.	208	187	199	179	210
Dec.	208	188	201	180	211
1954					
Jan.	208	189	200	180	212
Feb.	206	188	200	181	211
Mar.	206	188	200	180	210
Apr.	205	188	200	180	211
May	207	190	201	181	211
June	208	189	200	181	211
July	211	189	201	182	212
Aug.*	210	189	202	181	213
Sept.*	212	190	202	181	214

*Preliminary.

U. S. Bureau of Labor Statistics.



	1954	1953	1952
Jan.	115.2	113.9	113.1
Feb.	115.0	113.4	112.4
Mar.	114.8	113.6	112.4
Apr.	114.6	113.7	112.9
May	115.0	114.0	113.0
June	115.1	114.5	113.4
July	115.2	114.7	114.1
Aug.	115.0	115.0	114.3
Sept.	....	115.2	114.1
Oct.	....	115.4	114.2
Nov.	....	115.0	114.3
Dec.	....	114.9	114.1

U. S. Bureau of Labor Statistics.

and-egg situation. Demand is low for high-price, small screen sets. It will take mass production to cut costs. But producers will probably go ahead with their plans, hoping that demand will build.

Construction: Still Booming . . .

Speaking of building, construction permits in September were at a record high for that month, according to Dun & Bradstreet Inc. Showing the continuing strength of the construction boom, the rise is against the seasonal trend. The south central states continue to lead the country in amount of construction.

Good times seem to be ahead for porcelain enamelers. Historically, appliance production rises when home building increases, says R. A. Weaver, board chairman of Ferro Corp. And Ferro's porcelain frit business is closely tied to appliance sales. Mr. Weaver also predicts: "The market for porcelain enamel will constantly increase as new fields continue to open up."

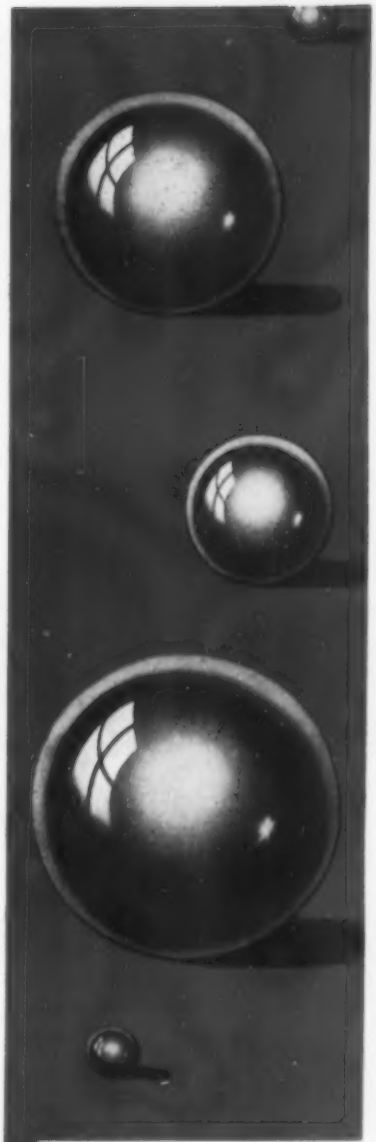
More Jobs Coming . . .

The break in hiring may be coming. An increase is predicted soon in the Cleveland area, significant because of its diversified industry.

If plans materialize, a 14-month downtrend will be halted. Professional, skilled, clerical and sales personnel are in demand. Primary metals, aircraft parts and automobile and automobile equipment industries are expected to lead the way in the new hiring.

Trends Fore and Aft . . .

With every automaker out for a bigger share of the 1955 market, someone is bound to be disappointed. Chances are, it won't be the "low price" cars of the big three. Chevrolet, Ford and Plymouth "super deluxe" models are likely to snag a goodly number of buyers out of the upper brackets . . . Railroad car loadings of revenue freight are holding tight to hard won gains of recent weeks. In the latest week reported by Association of American Railroads, loads were 721,402, close to the record for 1954, but still more than 100,000 under a year ago . . . Low traffic caused New York Central to cancel plans to build 850 box cars . . . Personal income and consumer spending were at record levels last summer, says Walter Williams, undersecretary of commerce. A drop in the near future is unlikely.



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AND
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MIDDLETOWN, OHIO

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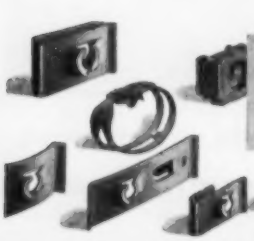
Everybody reaps the benefits of John Deere's fastener engineering on their new No. 227 Corn Picker. The farmer saves maintenance hours . . . the dealer makes fewer service calls . . . and John Deere cuts assembly costs 50%!

This triple play resulted from John Deere's six years of field testing and research into fastening methods. Studies proved that rugged, self-retaining SPEED NUTS provide the simplest, fastest, most secure attachments, and make servicing far simpler.

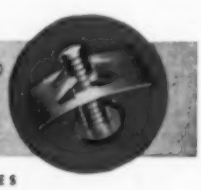
Similar savings and advantages can be yours. See your Tinnerman representative for details on our free Fastening Analysis Service.

Self-retaining "U" and "J" Type SPEED NUTS hold themselves in screw-receiving positions for blind-location assembly. John Deere uses sturdy 14Z sheet metal screws, power-drives them into nuts—no pre-assembling! SPEED NUTS can't freeze on threads—screws are always easy to remove for servicing.

Write for your copy of "SAVINGS STORIES"—a volume filled with fastening ideas. TINNERMAN PRODUCTS, INC., Dept. 12, Box 6688, Cleveland 1, Ohio. *In Canada:* Dominion Fasteners Ltd., Hamilton, Ontario. *In Great Britain:* Simmonds Aerocessories, Ltd., Treforest, Wales. *In France:* Aerocessoires Simmonds, S. A., 7 rue Henri Barbusse, Levallois (Seine).



TINNERMAN Speed Nuts®



MORE THAN 8000 SHAPES AND SIZES

JAMES H. MOORE
. . . Vacuum Metals gen. mgr.

GRIFFITH C. TAAFFE
. . . heads Cincinnati Lathe & Tool

JOHN F. LOTT
. . . heads Fort Duquesne Steel

Vacuum Metals Corp., Syracuse, N. Y., appointed **James H. Moore** general manager. Vacuum Metals, jointly owned by Crucible Steel Co. of America and National Research Corp., announces that all vacuum melting production facilities formerly operated by National Research and Crucible are being moved to Syracuse.

Harry H. Rose, general manager, **Simmons Fastener Corp.**, Albany, N. Y., was elected vice president and director. He continues as general manager.

P. S. Hoffman Jr. was elected vice president-manufacturing, **Donegal Mfg. Corp.**, Marietta, Pa. Since joining the firm in 1950 he has held successive positions as metallurgist, foundry superintendent and works manager. He previously served Treadwell Engineering Co. as metallurgist.

Theodore F. Talmage was appointed director of purchasing, **Perkin-Elmer Corp.**, Norwalk, Conn. He succeeds **Eugene W. Dunstan**, named general manager of the newly formed Vernistat Division.

Clifton T. Foss was made assistant general manager, **Arma Division**, American Bosch Arma Corp., Garden City, N. Y. He continues as vice president-engineering of the division.

Griffith C. Taaffe was elected president, **Cincinnati Lathe & Tool Co.**, Cincinnati. He joined the company in 1947 and became vice president in 1949. When **Millard Romaine**, who served as president since 1945, went overseas to start the Netherlands plant of Cincinnati Milling Machine Co., Mr. Taaffe became general manager of CL&T. Mr. Romaine continues as a director of CL&T and as a vice president of CMM.

Robert Grant was elected vice president-manufacturing and **W. H. Thourlby**, vice president-sales for **Standard Products Co.**, Cleveland. **James M. Hannan** was promoted to sales manager. Mr. Grant, formerly general operations manager, is in charge of all manufacturing operations at the firm's six plants. Mr. Thourlby was director of customer relations and has served in the Detroit sales office since 1945.

R. C. Graves was made director of sales, **Daybrook Hydraulic Division**, L. A. Young Spring & Wire Corp. He has headquarters in Bowling Green, O. He was formerly general sales manager of Ben-Hur Mfg. Co.

Mrs. E. P. Wilkinson resigned as president, **Logansport Machine Co. Inc.**, Logansport, Ind., to become chairman of the board. **C. H. Wilkinson** was elected president.

John F. Lott was elected president of **Fort Duquesne Steel Co.**, Pittsburgh division of Federated Steel Corp. He succeeds **Donald C. Lott**, who continues as president of the parent company.

Rudolph W. Glasner was elected a director and vice president, **Pressed Steel Car Co. Inc.**, Chicago. He is president of Clearing Machine Corp., Chicago, which last week became a division of Pressed Steel, and continues management of its operations.

Roy Abernethy was made vice president-sales, **Nash Motors Division**, American Motors Corp., Detroit. He was formerly vice president in charge of Willys Motors Corp.'s domestic sales office. Mr. Abernethy succeeds **H. Clay Doss**, resigned. Mr. Doss will be retained by Nash as a consultant. In Toledo, O., **Hickman Price Jr.**, president of Willys' export operations, takes over Mr. Abernethy's duties in addition to his own.

Dudley W. Nearing, manager of the Cincinnati zone sales office, **New Departure Division**, General Motors Corp., was appointed to a position in which he will specialize in applications of New Departure ball bearings in the field of machine tools. Although he continues headquarters at Cincinnati, he will fulfill staff assignments

ERNEST R. JOHNSON

W. M. KELLEY

. . . executive positions with Republic Steel and Reserve Mining

originating from the division's home office at Bristol, Conn.

Ernest R. Johnson was elected vice president-operations, **Republic Steel Corp.**, Cleveland. He succeeds **W. M. Kelley** who was named president of **Reserve Mining Co.**, Silver Bay, Minn. Mr. Johnson has served since 1953 as Republic's assistant operating vice president and is succeeded by **Harry L. Allen Jr.**, formerly district manager at Buffalo.

William D. Turnbull, general sales manager, was elected vice president in charge of sales, **Kennametal Inc.**, Latrobe, Pa. Before joining Kennametal, Mr. Turnbull was sales vice president of Pomona Pump Co.

E. D. Wilkins was appointed general superintendent of **Kaiser Aluminum & Chemical Corp.'s** bauxite mining, processing and shipping facilities in Jamaica. He formerly was assistant to the works manager, chemicals division, at Permanente, Calif.

General Metals Corp., San Francisco, appointed **William Clausen** executive vice president of the firm and general manager of its Enterprise Engine & Machinery Division. Mr. Clausen was vice president and general manager of Sangamo Electric Co. Ltd. of Canada.

Caterpillar Tractor Co., Peoria, Ill., elected **Charles A. Woodley** a vice president and appointed **Lloyd J. Ely** manager of its Peoria plant. Subsequent promotions in the Peoria plant manufacturing department include **Gordon Swardenski** as manager of manufacturing; **Cary L. Ice** as assistant manager of manufacturing, and **Robert E. Gilmore**, manager of the engine factory.

Richard H. Bergstrand was made chief design engineer, **Moline Tool Co.**, Moline, Ill.

United States Steel Corp. assigned **Bennett M. Livezey** to the vice president's office, Chicago, for special duties. He is replaced as general superintendent, South Chicago works, by **Oscar Pearson. Ralph W. Dickson** was made assistant general superintendent, Youngstown district works, to replace Mr. Pearson.

Diamond Alkali Co. appointed the following men to positions at its Muscle Shoals, Ala., plant, recently purchased from the government. **Steve Puschaver** is plant manager; **J. R. Horacek**, assistant plant manager; and **J. W. Whittleman**, personnel manager.

R. W. de Weese was appointed vice president-sales, and **Jefferson J. Davis** was appointed vice president in charge of product divisions

WILLIAM D. TURNBULL
. . . Kennametal v. p.-sales

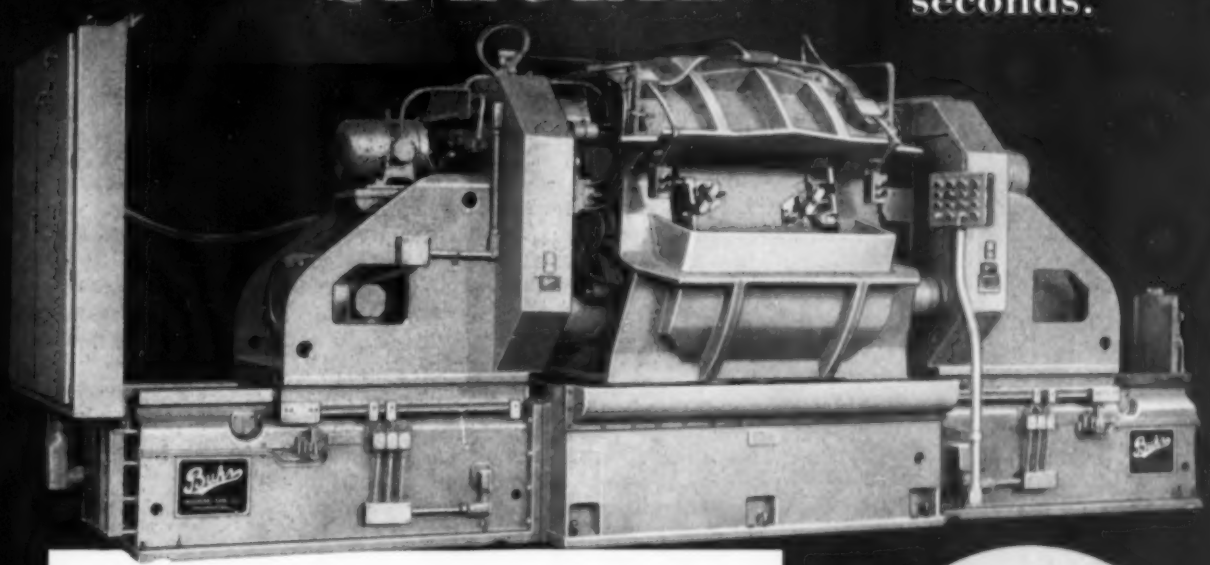
WILLIAM CLAUSEN
. . . General Metals executive v. p.

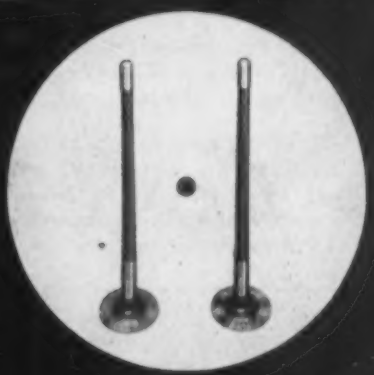
R. W. de WEESE
. . . Electric Steel Foundry v. p.-sales

Buhr

SPECIAL...

Drills, chamfers and taps two rear axle drive shafts every 22 seconds!





This Trunnion-Type Buhr Special drills, chamfers (both sides of holes) and taps 328 pieces an hour at 100% efficiency.

Two parts are loaded per fixture on this 6-station, 2-way Buhr Special.

Hydraulic clamping-and-unclamping is completely automatic.

Cluster heads — incorporated in a master gear box — are featured, as with all Buhr Trunnion-Type Machines.

On Buhr Specials, all parts are held to tolerances and are completely interchangeable. All component assemblies are located by precision-bored dowels. These Standard Buhr Features assure precision alignment!

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REUEL E. WARRINER
. . . Climax Molybdenum v. p.-sales

T. KENNETH HAVEN
. . . Detrex Corp. v. p.

RALPH E. DITTOE
. . . Cleveland Worm & Gear sales mgr.

for **Electric Steel Foundry Co.**, Portland, Oreg.

Reuel E. Warriner, since 1943 in charge of sales to the steel industry for International Nickel Co. Inc., was appointed vice president-sales of **Climax Molybdenum Co.**, New York. **Robert S. Archer** was made chief metallurgist.

B. E. Logsdon was appointed sales engineer on machine tool applications and special assignment for **Gairing Tool Co.** He will work from the firm's Detroit office. Mr. Logsdon was formerly chief engineer of Sheldrick Mfg. Co.

R. M. Hollingshead Corp., Camden, N. J., appointed **Harold L. Danziger** group manager in charge of its automotive, special brands and universal divisions.

T. Kenneth Haven, former executive vice president, Reichhold Chemicals Inc., was appointed vice president of **Detrex Corp.**, Detroit, effective Nov. 1. Mr. Haven's assignments will include the study of proposed expansion programs in this country as well as foreign trade investigations.

John C. Dopke, sales manager, automotive division, **A. O. Smith Corp.**, Milwaukee, will retire Jan. 1. **Urban T. Kuechle** will assume Mr. Dopke's post Dec. 1. **Milton E. Morgan** was advanced to assistant general sales manager for automobile products. Both men have been assistants to Mr. Dopke for the last eight years.

John F. Bishop was named general manager, **Beckman Instruments Inc.**, Pasadena, Calif.

Ralph E. Dittoe, assistant secretary, **Cleveland Worm & Gear Co.**, Cleveland, will also serve as sales manager of the firm's Worm Gear Division. He has been with the organization since 1919, serving in recent years as assistant sales manager. He is also a director of the corporation.

James M. Bell was made Pacific Coast sales manager for **Russell, Burdsall & Ward Bolt and Nut Co.**, Port Chester, N. Y. He replaces **Theodore I. Dunn Jr.**, recently made assistant vice president for eastern sales. Mr. Bell was formerly vice president-sales for E. J. Bradley Co. in southern California and Arizona.

Edward J. Gesdorf was named senior application engineer, **Farval Corp.**, Cleveland.

OBITUARIES . . .

John E. Schaible, 56, vice president and sales manager, **Crucible Steel Casting Co.**, Milwaukee, died Oct. 15.

Max S. Cohn, 65, associated with **L. A. Cohn & Bros. Inc.**, Chicago, for 49 years, died Oct. 15. He resigned as president last year. Since then he had been associated with R. Lavin & Sons Inc.

Henry Chamberlain, retired board chairman, **Los Angeles Steel Casting Co.**, died Oct. 9 in Oxnard, Calif.

Fred J. Wilson, 56, assistant superintendent in charge of furnaces, coke ovens and docks at **Jones & Laughlin Steel Corp.**, Pittsburgh, died Oct. 18.

Howard M. Knoerle, 54, employment manager and formerly chief accountant at **Jones & Laughlin Steel Corp.**, Cleveland, died Oct. 19.

Benjamin E. Irmis, 67, president, **Superior Tool & Stamping Co.**, Chicago, died Oct. 13.

Frederick W. Powers, 87, chairman since 1945 of **Powers Regulator Co.**, Skokie, Ill., died Oct 14.

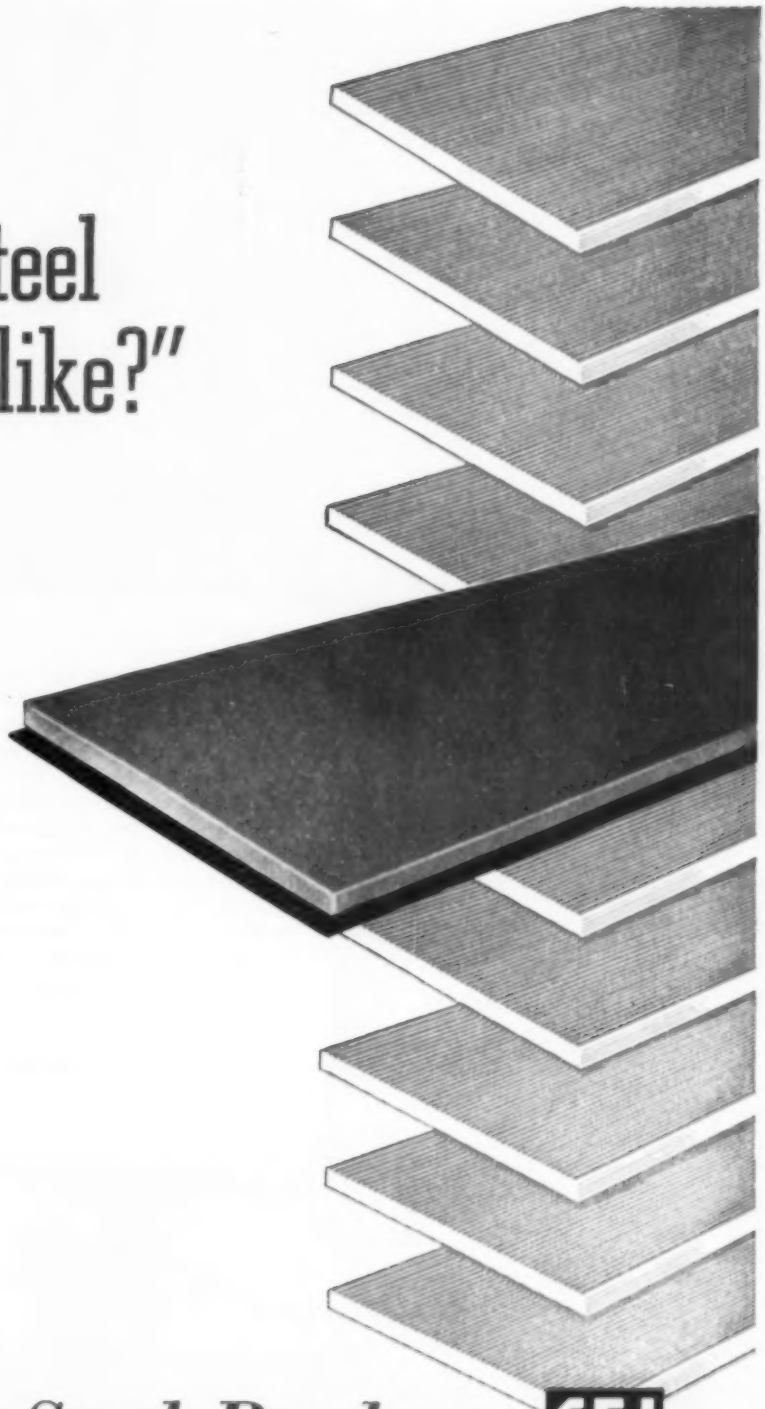
Paul F. Rice, 63, founder and chairman, **Milwaukee Chaplet & Mfg. Co.**, Milwaukee, died Oct. 10.

Henry L. Folsom, 68, president, **H. & D. Folsom Arms Co.**, New York, died Oct. 11.

Charles C. Calvert, 54, president, **Summerbell Roof Structures** and Summerbell Steel Products Co., Los Angeles, died Oct. 8.

Ollie V. Badgley, 69, retired vice president, **General Motors Corp.**, Detroit, died Oct. 19.

"aren't all steel plates alike?"



That's what some steel buyers think. But, take it from us at Claymont, it just isn't so! Or take it from the men in your fabricating shop. They know that—while many plates look alike—some are easier to work. They'll tell you, also, that Claymont plates save you money because your shop can do a better job.

You'll always find Claymont carbon and alloy plates among these preferred plates because they are tailored to your individual requirements. Right down the line your order gets personalized attention as it is processed through our sales office, checked by our metallurgists, produced by our skilled craftsmen, tested for proper physical and chemical properties by our laboratories and shipped to you *on time.*

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PHILLIE GEAR

...makes all types of REDUCERS

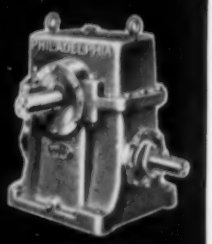
...here's why:

Years ago, we found that many firms preferred to buy all their Speed Reducers from "one manufacturer," because they could then make that "one source" of supply entirely responsible for performance and service. We also soon realized that no one or two types of Reducers were a "panacea" for all requirements,—so that is why we designed and manufacture every type of Reducer: Worm, Herringbone, Spiral-Bevel, Helical, Planetary, MotoReducers, and GearMotors . . . . all for a wide range of Horsepowers and Reduction Ratios.

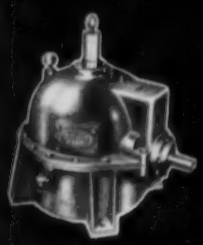
The illustrations herewith show the wide variety of Speed Reducers available from "Phillie Gear" . . . . Catalogs are available describing each type.

Steeple Type Worm

Vertical MotoReducer



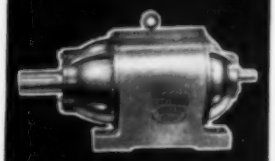
Right Angle Worm



Cooling Tower Drive

GearMotor

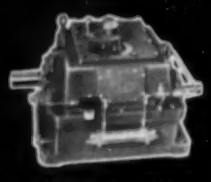
Herringbone Reducer



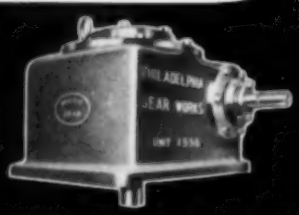
Planetary Reducer

Spiral Bevel Helical & Herringbone

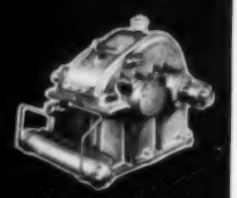
MotoReducer with "Planetorque" attachment



Change Speed Unit



Vertical Worm



High Speed Reducer or Increaser

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Industrial Gears and Speed Reducers
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Harvey Aluminum Expands

One 8000-ton and two 4000-ton forging presses will be installed in Torrance plant

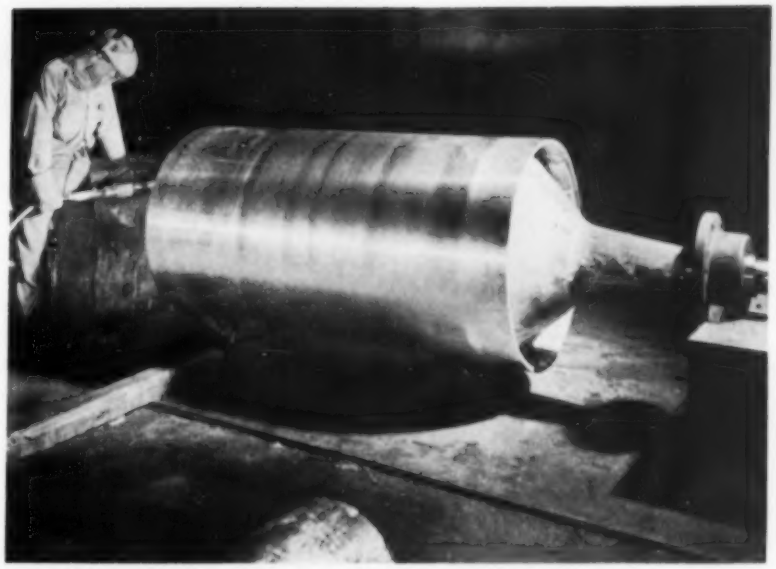
HARVEY MACHINE CO. INC.'S Harvey Aluminum Division, Torrance, Calif., has embarked on a major expansion program of its forging facilities. Added production is scheduled for about the middle of next year.

An 8000-ton forging press, standing three stories high, and two 4000-ton capacity forging presses are included in the program. Building costs will exceed $2 million, says Leo M. Harvey, chairman of the board.

Facilities Planned — Ground clearance is under way for the immediate construction of the new buildings, with the completion date slated for early 1955. The new structures will house presses and additional facilities for such secondary forging operations as trimming, heat treating and inspection.

The 8000-ton capacity press will have an available forging area of 40 sq ft. Designed to be exceptionally rigid, it will produce precision forgings no matter how complex or unsymmetrical, officials say.

Aluminum forgings in production at Harvey are used in vital parts for aircraft, automotive equipment, hand tools, portable industrial equipment, fittings, high-speed mechanisms and similar products.



For New, Wider Continuous Strip Processing

This 36-in. diameter dry hollow roller will be used in what is said will be the steel industry's widest continuous strip processing furnace. One of four being made by National Alloy Division of Blaw-Knox Co., Pittsburgh, the face of the alloy roller is 5 ft 9 in. It will operate in a controlled atmosphere furnace and is designed to work at temperatures up to 1800 degrees F

Connecticut Screw Expanding

Connecticut Screw Co., New Bedford, Mass., is building an addition to its plant in that city. The addition will be used to expand manufacturing space 50 per cent for its affiliate, Hy-Pro Tool Co.

Buys Torque Converter Line

Clark Equipment Co., Buchanan, Mich., supplier of automotive components, industrial materials handling trucks and construction equipment, bought the torque converter business of Torcon Corp., Ashtabula, O. In taking over inventories, engineering designs and products, tooling, trademarks, patents and certain other assets, Clark is not purchasing Torcon's capital stock, or assuming its liabilities. Neither is the firm acquiring Torcon's plant facilities or its basic machine tools at Ashtabula. Production will be transferred to Clark's transmission plant at Jackson, Mich., under the supervision of Roy McDermott, manager, Transmission Division.

Opens Cleveland Warehouse

General Fireproofing Co., Youngstown, opened a branch office and warehouse at Chester avenue and E. 36th street, Cleveland.

Crescent Metal Expanding

Crescent Metal Products Inc., Cleveland, is building a 30,000-sq-ft plant in Willoughby, O. The firm makes corrugated aluminum food handling equipment and delivery cabinets. It is developing a line of cabinets, racks and materials handling equipment made from high-tensile alloy aluminum and magnesium. Chalmers S. Thompson has been appointed head of a new engineering and development department; Frank Lepick, is superintendent of plant No. 2 at Willoughby.

Sylvania Building Factory

Sylvania Electric Products Inc., New York, is building a plant near St. Marys, Pa. Operated by Sylvania's Lighting Division, it will produce incandescent light bulbs.

Townsend Awards Contract

Townsend Co., New Brighton, Pa., awarded Mellon-Stuart Co., Pittsburgh, a contract for building the first $1-million segment of a $4.5-million plant at Ellwood City, Pa. The first section will provide 81,000 sq ft of manufacturing space to house some manufacturing operations now carried on at the New Brighton plant. Townsend makes rivets, industrial fasteners and cold-formed parts.

Galvanizing Consultants

Baldwin-Gregory Co. has been organized in Fair Haven, N. J., to consult on hot-dip galvanizing problems. Allen T. Baldwin is manager of flux sales with Hanson-Van Winkle-Munning Co., Matawan, N. J. William P. Gregory is vice president of New Jersey Galvanizing & Tinning Works Inc., Newark, N. J. Both men will stay with

HOW America out-produces the world
Logan gravity lines serve storage bins of screw and bolt manufacturer. Lines converge onto Live Roller Conveyor — right center—thence by powered Alligator Switch and Gravity to pallet loading station.

No. 9
OF A SERIES

AMERICAN INDUSTRY
"Knows the value of time"

Doing the same work in less time is just as desirable as doing the same work with less effort. The American industrialist realizes this. He knows a job costs less to produce when it goes through the plant in quick-time, and it means better service to the customer as well.

In many modern plants Logan Conveyors eliminate the go-and-get and the fetch-and-carry duties of slow hand-handling. With Logan equipment each hour can be filled with sixty productive minutes.

Remember too, you get that "something extra" in engineering and design when you specify Logan Conveyors. Write today for literature, or for engineer to call.

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Logan Conveyors

their respective companies while serving as executives of the new firm.

Dallas Firm Plans To Move

Visador Co., Dallas, maker of prefabricated light and louvered panels for doors, early next year will lease a building being constructed at 8500 Sovereign Row in the Hollow industrial district, that city.

Bart Buys Die Casting Firm

Bart Mfg. Corp., Belleville, N. J., purchased the production facilities of Detroit Die Casting & Plating Co., Detroit. Expanded facilities for gold plating die castings have been installed, and other operations are also scheduled to be enlarged, including die casting, finishing and plating facilities for copper, nickel and chromium.

Hoffman Shifts Operations

United States Hoffman Machinery Corp., Syracuse, N. Y., is concentrating production of its presses, dry cleaning machinery and laundry equipment in Wilkes-Barre, Pa. The Thompson road factories and foundry in Syracuse will continue to operate at present locations.

The new operation will enable Hoffman "to add many new products to those already established in the five present divisions of the corporation," says Hyman Marcus, president. "We will thus be able to branch out into other industries not now served by Hoffman."

IBM Dedicates Laboratory

International Business Machines Corp., New York, dedicated its 179,000-sq-ft laboratory at Poughkeepsie, N. Y., on Oct. 9. The new building lends itself to rapid interior adjustments to meet the requirements of fast moving research developments. The plan also readily allows the addition of supplemental facilities, both buildings and equipment, as needed. Featuring a press preview of the laboratory was a demonstration of an experimental "all-transistor" calculator with a computing unit

(*Please turn to page* 71)

FILTRATION for AUTOMATION

Delpark

MAKES AN ASSIST ON Quality Control AT IBM

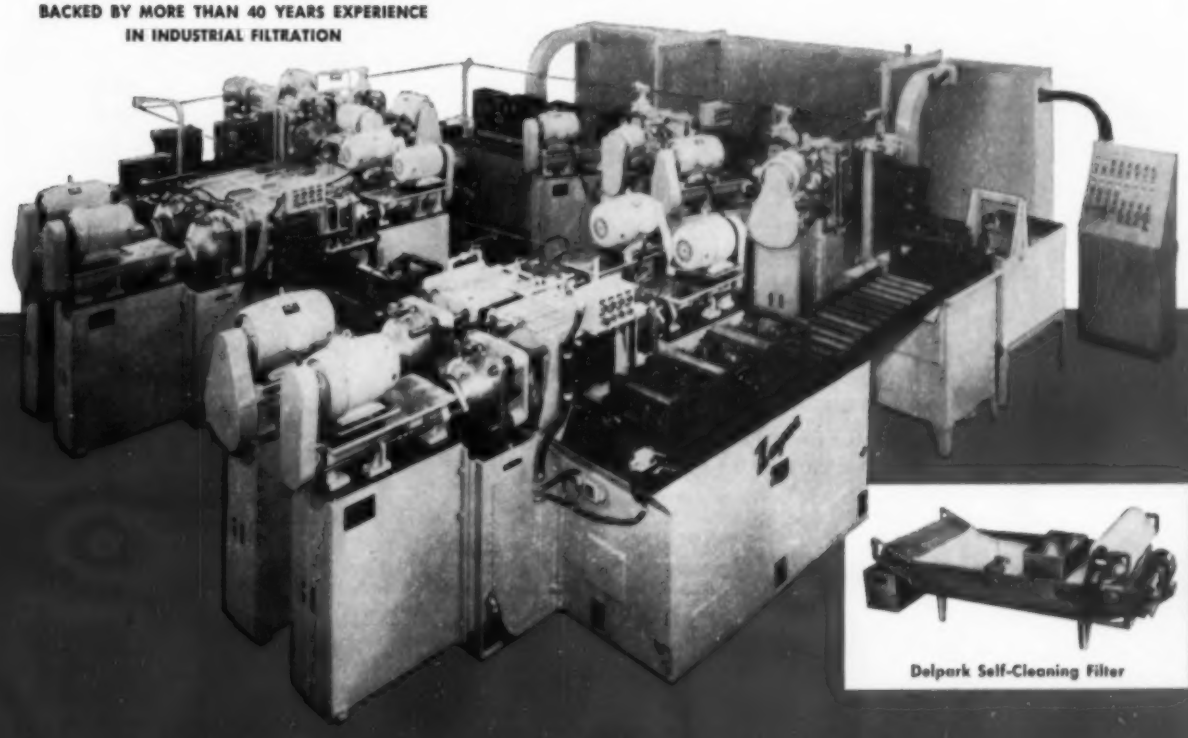
These Zagar pallet-type transfer machines at IBM perform numerous drilling operations on aluminum frames for the famous IBM typewriters.

Here is a fine example of Automation . . . and backing up this unit is automation in filtration. You won't see it in the picture, but . . . Delpark filtration cleans coolant from the 206 drill spindles. Greater accuracy of drill hole size, longer drill life, more efficient tool operation are but a few of the major savings gained through Delpark filtration. Delpark is one reason why up to 144 parts per hour are handled on this unit with but two operators. Credit IBM and Zagar tool engineering for foresight . . . credit IBM tool service for production know-how . . . credit Delpark for filtration as modern as today's automation.

For your filtration problems . . . for automation or normal procedure . . . contact Delpark for competent field engineering. There's no obligation. *Write today.*

DELPARK INDUSTRIAL FILTRATION

BACKED BY MORE THAN 40 YEARS EXPERIENCE IN INDUSTRIAL FILTRATION



Delpark Self-Cleaning Filter

INDUSTRIAL FILTRATION COMPANY, 99 INDUSTRIAL AVENUE, LEBANON, INDIANA

CAPITALIZE

ON THE SPEED AND *precision* OF A FARREL® HD ROLL GRINDER

Faster and more accurate roll grinding means less cost per roll ground, plus a superior reconditioning of the roll.

You can capitalize on the use of a Farrel heavy duty roll grinder because this machine has the ability to consistently produce rolls with a flawless surface . . . straight or contoured precisely to specifications . . . *at a high output rate.* Design features also reduce setting-up time to a minimum.

Write for Bulletin No. 115 which gives full description of this cost-saving roll grinder.

The Farrel automatic crowning device produces a mathematically accurate curve for either convex or concave roll shape, without manipulation by the operator.

FB-910

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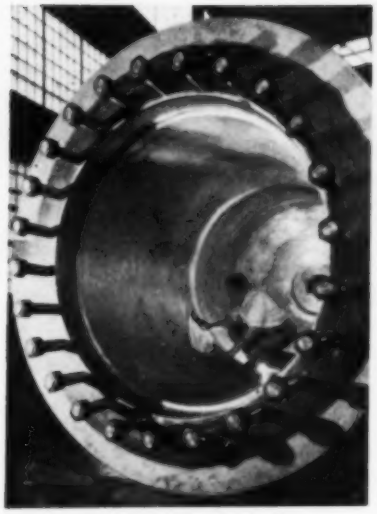

Vital Organ for Big Press

This forged steel cylinder produced by Bethlehem Steel Co. measures nearly nine feet across outside flange and weighs about 75 tons. It was shipped to Aluminum Co. of America's Lafayette, Ind., plant for installation on a 14,000-ton extrusion press, which fabricates airplane parts

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(*Continued from page* 68)

about one-half the size and requiring only 5 per cent as much power as a comparable vacuum tube unit.

Contour Co. Expands

Contour Co., Los Angeles, expanded plant facilities by 200 per cent for production of wind tunnel models and engineering machinery.

Bailey Meter To Build Plant

Bailey Meter Co., Cleveland, will build a 12,500-sq-ft plant in Wickliffe, O. Construction is expected to start next spring.

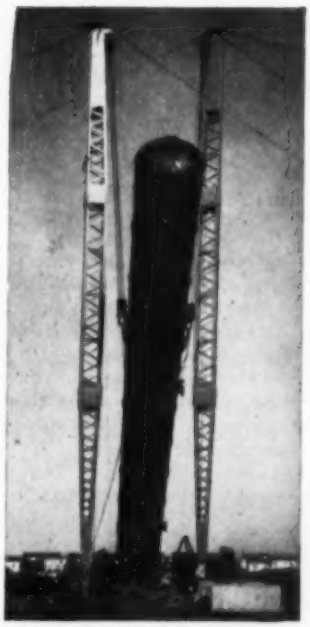
Stanley To Buy H. L. Judd Co.

Stockholders of H. L. Judd Co., Wallingford, Conn., approved a proposal for sale of the company to Stanley Works, New Britain, Conn. Judd manufactures household metal hardware.

Wolverine Tube Opens Depot

Calumet & Hecla Inc.'s Wolverine Tube Division, Detroit, opened a depot in Rochester. It'll stock its seamless copper water tube, automotive tube and refrigeration

Multiple-part Red-Strand Slings handle heaviest loads, and are easy to apply to both the load and the crane hook. User tests in Detroit proved Red-Strand slings withstood unusual abuse, yet maintained higher-than-rated strength. A Gary plant uses Red-Strand single-part slings for many lifting jobs like this. These slings are available with various combinations of end fittings for attaching the sling to rings or lugs.



A heavy cylindrical load usually calls for multiple-part Red-Strand Flat-Laced slings. They are strong, flexible and do not slip or abrade.

How to Select the Correct Sling for Your Job

Start your sling selection by analyzing five factors:

1. The load—its size, weight, shape, finish.
2. Working area, amount of head room.
3. Size and type of crane hook.
4. Angle of sling legs.
5. Location and type of lugs or rings, if any.

From this information your supplier can recommend the sling by type, size and length that is safest, longest lasting and most economical for your job.

Types of Slings

Multiple-part slings are always recommended for heavy duty service, because for equal strength they are far more flexible than single-part slings. They hug the shape of the load easily, present a greater bearing surface to the load, and reduce the possibility of marring surfaces.

Where these factors are not so important, either Red-Strand ***single-part slings*** or ***grommet slings*** may be used for economy. Single-part Red-Strand slings are often recommended for lifting lighter weight objects, or those that have fixed attaching rings or lugs. Grommet, or continuous strand Red-Strand slings are ideal for forming hitches of various types without fittings.

When you re-use Pin-Lock thimbles you reduce sling costs by 21%

Extra Savings

Two suggestions will help you save money on slings.

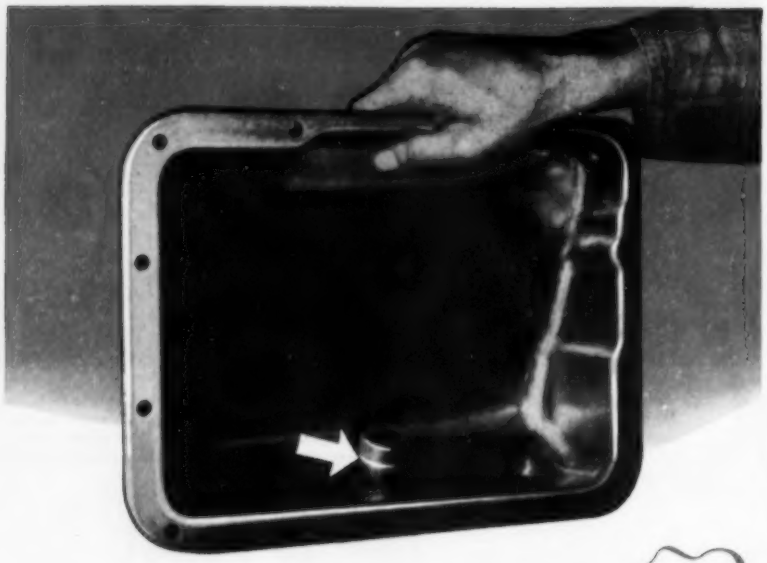
The first is to re-use Pin-Lock thimbles on multiple part slings. These exclusive Leschen Pin-Lock thimbles cut sling costs on an average of 21% because they may be used again and again. They lock into sling loops with pins instead of permanent clamps, permitting re-use, and eliminating constant expense of thimble replacements.

The second suggestion is to use Red-Strand slings because they are made of ***higher-than-rated*** quality Leschen wire rope that delivers ***longer-than-expected*** service.

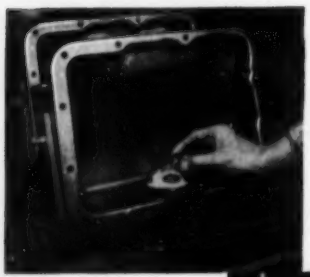
Get a copy of Leschen's *Sling Handbook* for complete information. Ask your Leschen man for one, or write.

LESCHEN WIRE ROPE DIVISION
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri

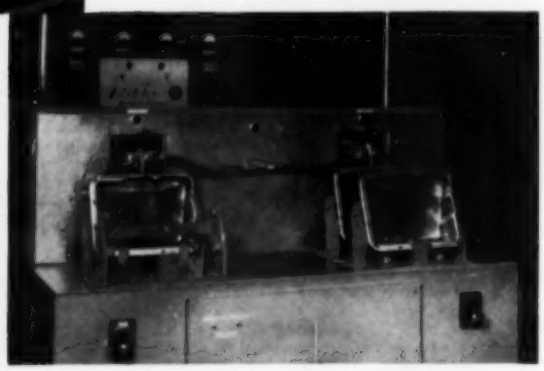
LESCHEN
HERCULES Red-Strand
WIRE ROPE



A prize recipe
FOR BRAZING SPUDS



The principal ingredient is the low-temperature silver brazing alloy EASY-FLO. You simply place the spud in position with a ring of EASY-FLO wire around it, apply flux and heat. Logan Machine & Metal Stamping Co., Akron, Ohio, get excellent results with this recipe in brazing spuds in the oil pans that are part of an automatic automobile drive. Photos show how they do it.



Pans with spuds and EASY-FLO rings are placed in fixtures of 2-station induction heating unit. Brazing two at a time, production is 400 an hour. Under a 100-lb. torque test "the pan pulls apart first."

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It gives you tried and proved recipes for fast, low-cost metal joining that never fail. Write for a copy today. Ask for BULLETIN 20.

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BRIDGEPORT, CONN.
PROVIDENCE, R. I.
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CLEVELAND, OHIO
DETROIT, MICH.
LOS ANGELES, CALIF.
TORONTO, CANADA
MONTREAL, CANADA

tube. G. H. Tobelman, eastern district sales manager, will coordinate the new mill depot operations through Wolverine's Rochester office.

Metalware Concern To Move

Richard Hart Mfg. Co., a metalware concern, leased a building in Phelps, N. Y., to which it will shift operations from Rochester.

Bridgeport Firm To Build

Bridgeport Hardware Mfg. Co., Bridgeport, Conn., will construct a $1-million plant to replace its present one.

Perforating Firm Expanding

Accurate Perforating Co., Chicago, bought a building at 3436 S. Kedzie St., that city. The additional space (220,000 sq ft) furthers plans to triple output and facilities.

Plating Plant Opened

Scientific Platers Inc., Alhambra, Calif., opened a plant in that city for production of hard chrome plating equipment.

Chevrolet Plans Supply Depot

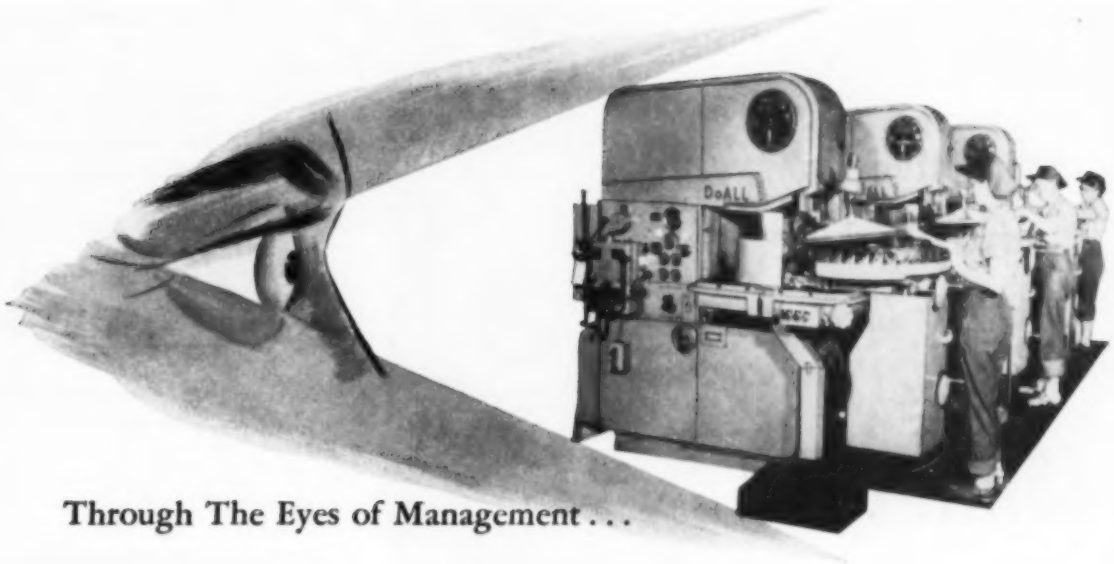
Chevrolet Motor Division is leasing 896,400 sq ft of General Motors Corp.'s Willow Run plant and will construct a 125,000-sq-ft addition as a major supply depot for its parts and accessories department. GM's Hydra-Matic transmission plant occupies the rest of the building.

Army Authorizes Two Projects

The Army approved an $8-million project for the construction of an ammunition plant at Rocky Mountain Arsenal, Denver. Also approved was a $16-million project to prepare for production of the Nike guided missile at Charlotte, N. C.

The Denver plant, scheduled for production in about 15 months, will provide facilities for assembling and packaging chemical-type ammunition. Cost estimates include about $3,750,000 for new buildings.

The Charlotte project will pro-



Through The Eyes of Management . . .

The New Concept!

THE vision to create and use new applications of basic principles has always been the key to improved methods and lower costs.

Production band machining is a new cost reducing application of bandsawing, a principle of metal cutting that is as basic as milling, drilling, turning, grinding and shaping and provides greatly extended geometry of cutting.

DoALL introduced the band machine as a basic machine tool and has since developed its fundamental cutting advantages to greatly extend the realm of production metal-working by providing a power feed table, a coolant system, variable speeds, increased power, greater rigidity *and improved saw bands that cut up to 5 times faster and last up to 30 times longer.*

Such operations as slotting, splitting, notching, contour cutting, angle cutting and many other jobs can be done on DoALL band machines at ⅓ to ½ the cost of doing them on other machines. The more costly machines are thus freed for work they can do best.

The capital investment in band machines is less than other production machine tools, cutting is faster, tool costs lower, fixturing simpler, set-up time less. Machine tool accuracy is secured, with excellent finishes. Ask to have a DoALL demonstration truck visit your plant. No obligation. Call your local DoALL Service-Store, or write: ***The DoALL Co., Des Plaines, Ill.***

Free on request, New Wall Chart, "How Basic Tools Created Civilization".

PB-7

Trimming jet turbine blades automatically on a band machine. A power-driven rotating fixture feeds the work into the saw blade.

DoALL

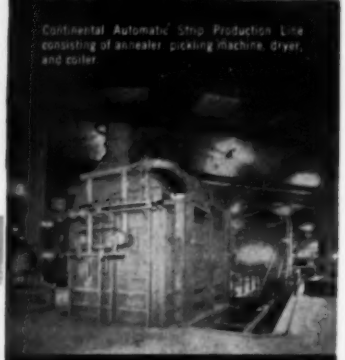
DoALL band machines, saw bands, precision surface grinders, granite surface plates, tool steel and precision measuring instruments are available through 38 DoALL Sales-Service Stores which also stock a complete inventory of cutting tools such as taps, reamers, twist drills, cutters and single point tools.

The over-all job in

Production Lines and Special Automatic Machines by CONTINENTAL

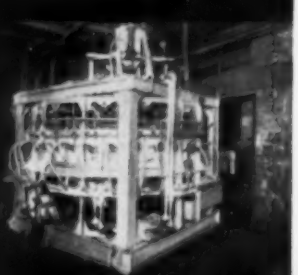
for military production . . .

Continental Automatic Strip Production Line consisting of annealer, pickling machine, dryer, and coiler.



Continental Special Automatic Pig Molding Machine complete with automatic charging, melting, and pouring.

Continental Automatic Production Line operating from raw materials to completely finished and packed product. This production line consists of fifteen integrated, synchronized, special automatic machines.



Continental Special Automatic Glazing Machine complete with automatic press synchronizer and fire polisher.

For maximum production of military items manual operations must be eliminated. With CONTINENTAL Special Automatic Machines and Integrated Production Lines production goes on in a continuous flow with better, more uniform products with a minimum of man hours.

CONTINENTAL jobs begin with analysis of the requirements, then the selection and development of proper methods for greatest results. Finally follows the design, the building, and the installation of the machines—delivering a COMPLETE UNITIZED PRODUCING PACKAGE with results guaranteed.

The broad experience of CONTINENTAL offers you a prompt, sure solution to your change-over program.

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FURNACES
PRODUCTION LINES
CONTINENTAL
SPECIAL MACHINES
COMPLETE PLANTS
MANUFACTURERS—ENGINEERS—CONTRACTORS FOR OVER A QUARTER OF A CENTURY

vide for plant modification and installation of equipment, including standard and special machine tools, testing equipment and shop facilities. The plant will go into production in 1955 under terms of a contract with Western Electric Co., New York, and Douglas Aircraft Co. Inc., Santa Monica, Calif.

ASSOCIATIONS

Raymond A. Vidinghoff, president, Machinery Associates Inc., Wynnewood, Pa., was elected president of **American Machine Tool Distributors' Association**, Phil-

R. A. VIDINGHOFF
. . . pres., Machine Tool Distributors

adelphia. He succeeds Thomas R. Rudel, president, Rudel Machinery Co. Inc., New York. Other officers elected at the association's 30th annual meeting in Cincinnati on Oct. 19-20 are: Henry R. Hanson, Wm. K. Stamets Co., Cleveland, vice president; Joseph F. Owens Jr., J. F. Owens Machinery Co., Syracuse, N. Y., second vice president; Frank H. Habicht, Marshall & Huschart Machinery Co., Chicago, secretary-treasurer.

National Safety Council, Chicago, named Herman J. Spoerer vice president for industry and chairman of the Industrial Conference. One of the important functions of this conference, the largest

Weirzin

ELECTROLYTIC ZINC-COATED SHEETS

Cut manufacturing costs!

- Speed production
- Increase die life
- Reduce die maintenance

From the first day you use Weirzin you will find a marked reduction in manufacturing costs. Your production rate will increase with less time spent on die maintenance and replacement. The tight zinc-coating, electrolytically applied to Weirzin steel, actually lubricates dies without leaving a zinc deposit—thereby reducing die maintenance expense and lengthening die life.

One fabricator reported a 300 per cent increase in production per set of dies after changing to Weirzin from ordinary carbon steel. This is an economy factor too great to be ignored.

Add to this the fact that the zinc coating on Weirzin will not flake, peel or powder under the most severe fabricating operations and you will quickly realize what production economies Weirzin has to offer. Write today for further information on how Weirzin can cut your manufacturing costs—and make your product a better one.

WEIRTON STEEL COMPANY

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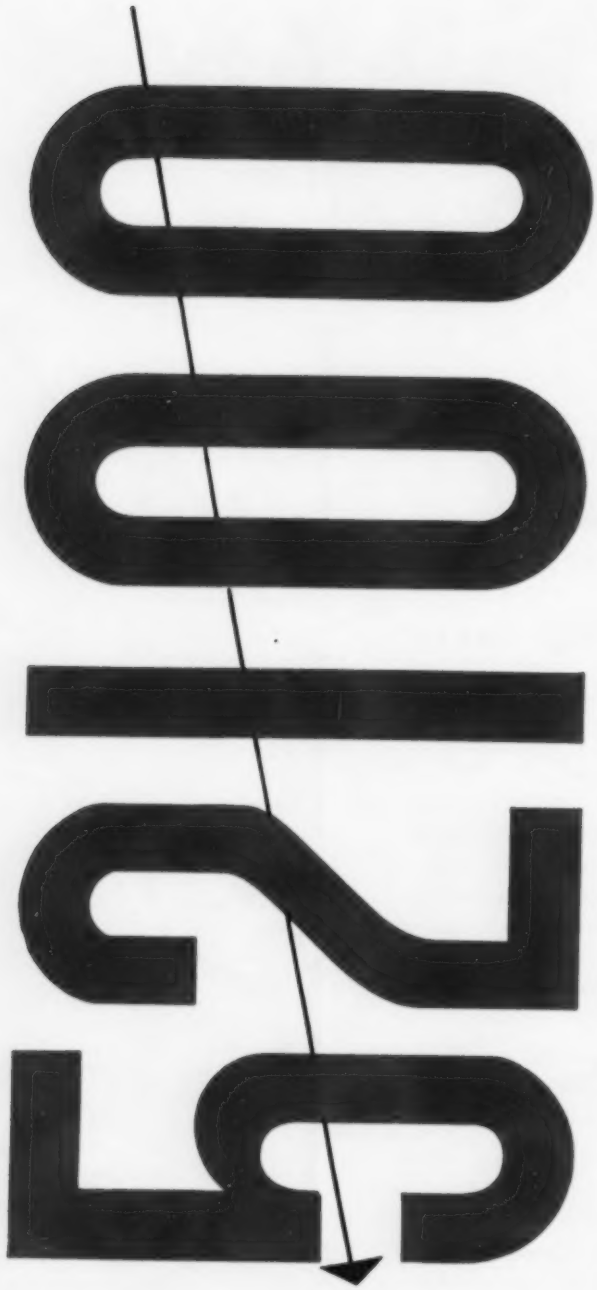
WEIRTON STEEL COMPANY



TUBES · BARS · FORGINGS · WIRE

PETERSON STEELS, INC.
UNION, NEW JERSEY
Detroit, Michigan • Chicago, Illinois

of seven into which activities of the council are divided, is to serve as a technical advisory group on industrial safety operations. Mr. Spoerer is director of industrial relations, Youngstown Sheet & Tube Co., Youngstown.

Walter A. Renz was named secretary of **American Railway Car Institute,** New York, succeeding William C. Tabbert who retires after 35 years' service.

REPRESENTATIVES

Raybestos - Manhattan Inc.'s Manhattan Rubber Division, Passaic, N. J., appointed Howell-Lanier Engineering Sales, Baltimore, as distributor for its industrial rubber products.

Electric Regulator Corp., Norwalk, Conn., appointed C. B. Parsons & Co., Seattle, sales representative in Washington, Oregon, Idaho, Montana and Alaska.

Adamas Carbide Corp., Kenilworth, N. J., appointed Don R. Manecke, Milwaukee; R. C. Dombrow Co., Chicago; and Pierce Frauenheim, Pittsburgh, as sales representatives for its standard carbide tools, tool tips, dies and wear parts.

Allis-Chalmers Mfg. Co., Milwaukee, appointed Carleton Stuart Corp., New York, and Robertson Electric Co. Inc., Buffalo, as distributors for its pumps; Vinson-Carter Electric Co., Phoenix, Ariz., as distributor for its control equipment.

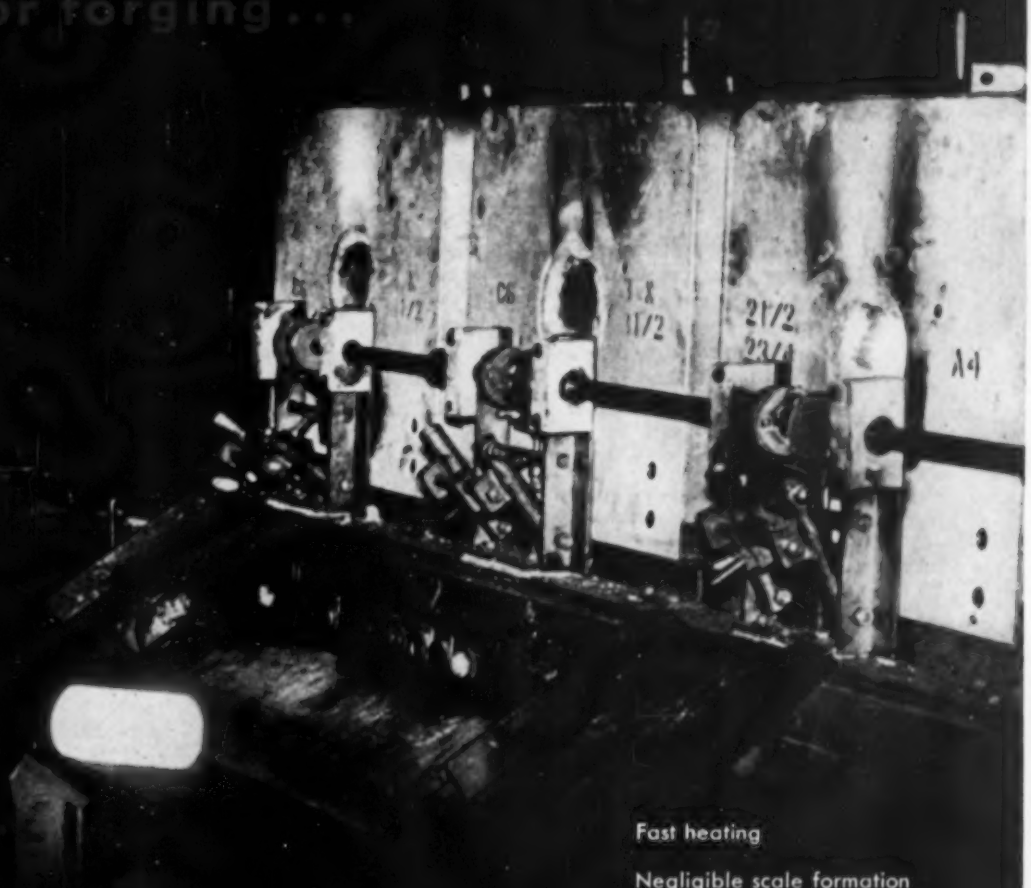
Insul-Mastic Corp. of America, Pittsburgh, appointed Carter-Bearden Co., Atlanta, as representative for its heavy asphaltic coatings.

Kaiser Aluminum & Chemical Sales Inc., Oakland, Calif., appointed Alloys & Chemicals Mfg. Co. Inc., Cleveland, as distributor of its standard alloy ingots. The Cleveland firm is a smelting company with a monthly capacity of 3.5 million pounds of aluminum alloys, deoxidized aluminum, chemical grades of aluminum, alumi-

THE IDEAL METHOD:

INDUCTION HEATING

for forging...



Fast heating

Negligible scale formation

Uniform or pattern heating

Maximum job flexibility

Competitive overall costs

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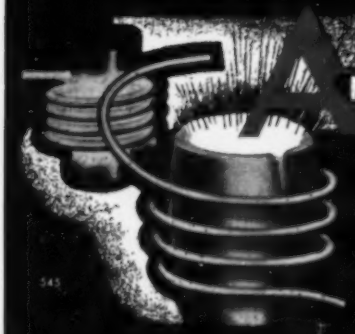

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Chromium Plating Process Saves Navy Millions

CHROMIUM coating of engine parts is saving the Navy millions of dollars in cost of overhauls.

Since adopting a process of plating chromium to the walls of engine cylinders to extend their service life, more than $15 million in the cost of aircraft engine overhauls has been saved. The process extends the service life of engine cylinders from 1200 to more than 3000 hours of operation.

By eliminating corrosion of the cylinder bores, the coating reduces by 50 per cent the wear on pistons and rings, oil consumption and accumulation of carbon and sludge in oil systems.

Previously, overhaul involved regrinding or replacing cylinder barrels worn beyond dimensional tolerances. Cylinder barrels were the first to wear out. With the new process, the probable limiting factor is a breakdown of the cylinder head.

Need for oversize pistons and rings also has been eliminated. In addition, inventory requirements for new cylinder assembly spares has been reduced. As a result of the increased operating time between overhauls, the total number of engines required to support the Navy's engine program has been reduced.

num shot and grain and aluminum hardeners. N. L. Butkin is president; Alfred Sugar, vice president and technical director; David Thakar, vice president-purchasing; Joseph Silber, treasurer; G. A. Nagel, works manager.

Lee Healey Co., Glendale, Calif., plans national distribution for its Neovane rubber impeller pump line. Construction of the pumps features an entire body casting of solid marine bronze with stainless steel shafts.

Chromalloy Corp., New York, appointed William K. Duff & Co., Darien, Conn., as its New England field representatives.

Pandjiris Weldment Co., St. Louis, appointed several representatives: Acme Welding Supply Co., Houston; Arizona Welding Equipment Co., Phoenix, Ariz.; Aweco Supply Co., Tucson, Ariz.; Big Three Welding Equipment Co. Inc., Ft. Worth, Tex.; Industrial Specialties Co., Portland, Oreg.; Industrial Supply Co., Salt Lake City, Utah; Johnson Supply Co., Denver; John H. Lease, Palo Alto, Calif.; Saginaw Welding Supply Co., Saginaw, Mich.; Service Supply Inc., Oklahoma City, Okla.; Welding Engineering & Equipment Co., Syracuse, N. Y.; Welding Equipment Sales Co., Buffalo; Welders Supply Co., Seattle; Wiley Welding Supply Co., Los Angeles; Young-Welf Associates Inc., Cleveland.

Hamer Valves Inc., Long Beach, Calif., appointed Ralph H. Stockton Co., 4101 San Jacinto St., Houston, sales agent for its valves in southern Texas.

Johnson-Davis Co. was organized to represent manufacturers in the sale of industrial products. J. S. Davis is president with offices at 952 N. Michigan Ave., Chicago. Other officers are C. S. Davis Jr. and J. E. Johnson, vice presidents; Harvey Weeks, secretary; and Owen Trayner, treasurer.

Firth Sterling Inc., Pittsburgh, appointed E. C. Blackstone Co., Memphis, Tenn., and Farquhar Machinery Co., Jacksonville, Fla., distributors for its Firthite tools, tips and blanks; high-speed toolholder bits, drill rod and ground flat stock. Kalamazoo Mill Supply Co., Kalamazoo, Mich., was appointed distributor for its Firthite tools, tips and blanks. Athos Steel Service, Philadelphia, will handle its line of tool and die steels, high-speed toolholder bits, drill rod and flat stock in the Philadelphia and eastern Pennsylvania trading areas.

NEW ADDRESSES

R. G. White Mfg. Corp. (formerly R. G. White Engineering Co.) moved to 101-18 97th Ave., Ozone Park 16, N. Y. The new plant increases previous manufacturing facilities more than fourfold. The company makes custom-engineered machinery and equipment.

Colorado Fuel & Iron Corp.'s Wickwire Spencer Steel Division moved its Realock fence department to 333 Hillside Ave., East Williston, Long Island, N. Y.

John B. Moore Corp. moved its offices to 384 Franklin Ave., Nutley, N. J. The company keeps its old mailing address, P. O. Box 3, Nutley 10, N. J. The company produces industrial solvents and related application equipment.

Gulbert Steel Co., Pittsburgh, opened a sales and engineering office at 15 E. 40th St., New York. Gerald Anthony Paul, architect and engineer, is in charge.

Schwenzer Tool & Die Co. Inc. will move its operations to Cheektowaga, N. Y., upon completion of a new building about the end of the year.

Earle M. Jorgensen Co., distributor of steel and aluminum products, moved its sheet and strip slitting facilities to 10650 S. Alameda St., Los Angeles.

B. F. Goodrich Co.'s Sponge Products Division, Shelton, Conn., moved its purchase and advertising departments to plant "D" at 6 Bridge St., that city.

Garrett Corp., Los Angeles, established permanent eastern headquarters at 261 Madison Ave., New York. This office will supervise operations of the Air Cruisers Division, Belmar, N. J.; Aero Engineering Division, Mineola, N. Y.; Garrett Mfg. Co. of Canada, Toronto, Ont. Frank Miles, vice president, is in charge of the eastern divisions.

Which package is best for you?

ROEBLING HIGH CARBON WIRE is packaged in many ways... and for every kind of usage there's one particular type of packaging that will bring top handling and production efficiency... new economy in your plant. For certain wires, Roebling's new large-size reels or new disposable spoolless cores have special money-saving advantages:

The large reels are ideal for long runs. They reduce down time to a minimum.

The new spoolless core (a hollow fibre core without flanges) abolishes the storing and return of empty spools ... eliminates charges for spools and waiting for credits.

You *pay* for the best when you buy high carbon wire. Make sure you *get* it in wire and packaging. Specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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CANADA, RAILWAY & POWER CORP., LTD.
EXPORT: COPPERWELD STEEL INTERNATIONAL COMPANY
117 Liberty Street, New York 6, New York

STEEL
November 1, 1954

Technical Outlook

PROBLEM HYDROGEN— As little as one part of hydrogen per million in steel may cause defects or lower ductility say metallurgists at MIT. So it's important to keep hydrogen content of steel as low as possible while it is still liquid, they told the AISI. Main source of hydrogen in steel is moisture in the furnace, ladle and runner, they said.

MIRROR ALUMINUM— Availability of an aluminum alloy which takes an anodized finish similar to polished chrome plate has been announced by Kaiser. The alloy, 5357 (K157) is suitable for use in household refrigerators, kitchen ranges, automobile trim and giftware, says Kaiser. It comes in flat sheet, coil and circles.

LIGHTER AUTOS—The aluminum automobile comes one step closer as a result of performance tests being conducted by Harvey Aluminum Co., Harvey is concentrating on aluminum chassis and frame modifications.

ACTIVATED ELECTRODE— Development quantities of an activated electrode of mild steel wire for use in the Aircomatic process are available. Activation agents change the burn-off rate so that stable spray-type transfer can be obtained on direct current straight polarity without the need for oxygen additions to the shielding gas.

ATOMIC UTILITIES— "We speculate that in 1964 the amount of atomic power installed may be in the neighborhood of two million kilowatts . . . Some experts estimate that by the year 2000, about 50 per cent of the electric utility industry's capacity will be nuclear-powered."

In voicing this prediction, Gwilym A. Price, president of Westinghouse, points out that by the year 2000 generating capacity using coal, oil and gas will be increased two or three fold over what it is today. Westinghouse is backing the prediction with $50-million invested in new plants and research on the thermal cycle and steam turbine.

HOT SPOT RECTIFIER—A new type selenium rectifier which will operate continuously in temperatures up to 212° F at the same voltage and current loads as at room temperature has been announced by Fansteel Metallurgical Corp. High operating temperatures of rockets, guided missiles and jet aircraft make the device timely.

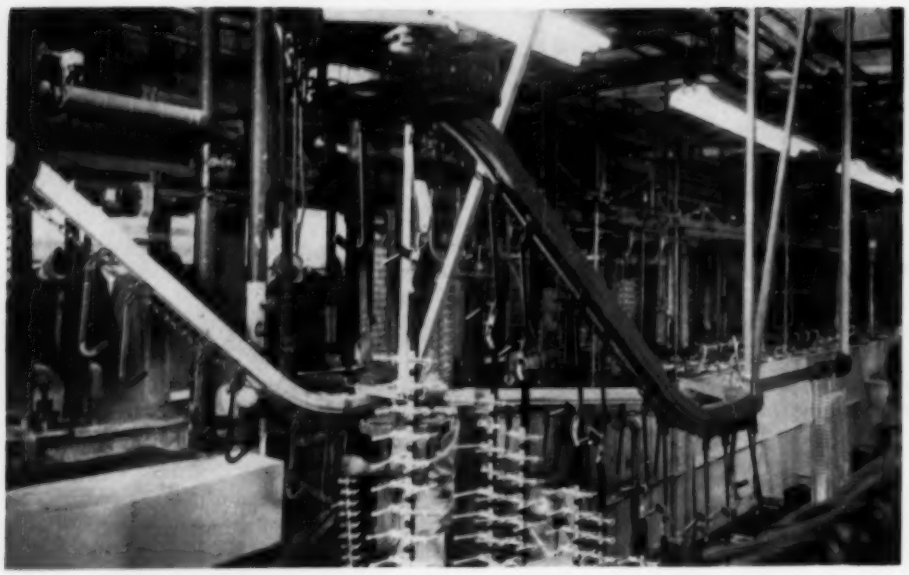
PORCELAIN PROGRESS— Alcoa sees a potential market for porcelain enameled aluminum of 200 million lb a year by 1970. Good resistance of enameled aluminum to chipping, and the fact that it can be drilled or sawed without damaging the coating are some of the reasons behind the prediction.

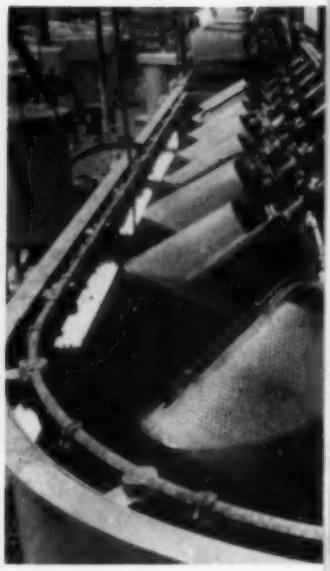
BRICKS AND DOLLARS— Steel companies spend about $1.50 for refractories for every ton of steel produced. As demand grows for furnace linings, checker brick and ladle linings that stand higher temperatures for longer times, refractories become increasingly important in the cost of steel. Steel companies, awake to the problem, are employing more ceramics engineers.

THIN TITANIUM— Titanium foil rolled to close tolerances and thin gages is being produced on a Sendzimir mill. Applications so far include fire shields, brackets and shims for aircraft, valve parts and tank and tube liners in the chemical industry and instrument parts where corrosion and strength factors rule out other materials.

RUGGED THERMOCOUPLE— If you need to measure heat in gun bores, cylinder and piston walls, brake drums, aircraft skins, autoclave walls and air ducts, a rugged new thermocouple with a fast response is available. It has worked satisfactorily up to 60,000 psi under severe mechanical vibration.

Metalworking Outlook—p. 31 Market Outlook—p. 117





This automatic rack line will handle over 85,000 large pieces in an 8-hour day. It is 70-ft long

They Go for Plating

About any type plating or surface treatment you can name is a routine proposition for these nine lines. It'll take on a thimbleful of screws or bolts up to 48 in. long

"A PLATING SUPERMARKET" is about the only way you can accurately size up the new $1 million plating installation at Standard Pressed Steel Co., Jenkintown, Pa.

Nine lines handle almost every type of plating and surface treatment as a routine matter—from cadmium, zinc, chrome, tin, silver, copper and nickel to nickel phosphide, phosphate, Parkerizing, black oxide and chemical film surface treatment.

The job may be a thimbleful of 0-80 screws or 4-in. bolts up to 48 in. long. In an eight-hour day, over 100,000 pieces can be plated on racks, 30,000 lb in barrels.

The Lineup—Machine number one is an automatic rack line 70 ft long that handles large pieces. Its eight-hour capacity is 85,000 pieces. Stations include: Soap cleaner, clear water rinse, cleaner, hot rinse, cold rinse, chemical dip, rinse, plating solution, spray rinse, rinse, rinse, brightener, rinse.

Number Two—This is a semi-automatic rack machine that is 30 ft long and has an eight-hour capacity of 12,000 pieces. Preparation is completed ahead of the machine in cleaning and rinsing tanks. Post-plating and rinsing also are finished in other tanks. Both operations are integral parts of the line.

Number Three—A manual barrel line, it plates 6000 lb in eight hours.

Number Four—This fully automatic barrel line is 60 ft long, with 37 barrels, each holding 40 lb. Stations include: Soap wash, pure water rinse, rinse, chemical dip, cleaner, pure water rinse, plating solution, water rinse, brightener, neutralizing bath, cold rinse, hot-water rinse. Eight-hour capacity is 10,000 lb.

Number Five—This is a manual barrel line generally used for plating silver. It will handle 4000 lb in eight hours.

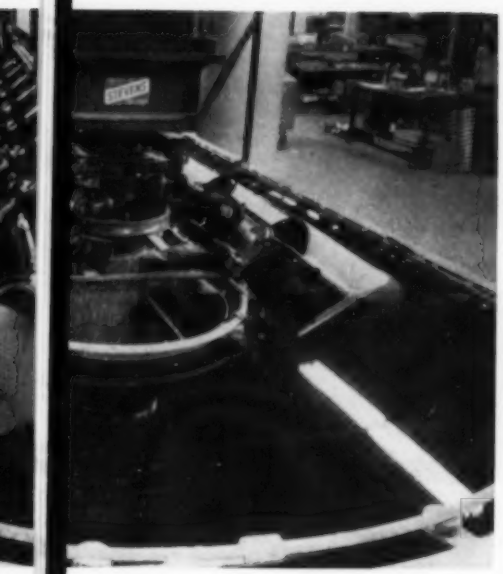
Number Six—A miniature line (manual barrel type), this one handles smallest pieces. Capacity is about 200 lb in eight hours.

Number Seven—This manual rack line will plate cadmium, copper, chrome, tin and nickel—all at the same time. Capacity is 3000 pieces in eight hours.

Number Eight—This is a manual barrel line for surface treatment with chemicals and heat. Production runs up to 10,000 lb in eight hours.

Number Nine—A manual basket line, this one chemically treats aluminum, converting the surface to a chromate. Capacity for eight hours is over 1000 lb.

Scope—These lines plate all SPS aircraft bolts, 85 per cent of Flexloc locknut production and other jobs, including Unbrako socket screws, Hallowell collars, metal stampings, hardware and parts for textile equipment, machine tools, electrical appliances, jet engines and autos.



Plating end of this automatic barrel line holds 25,000 gallons of solution. Pieces rotate in barrels

Guide for Planning Your Plating Job

Code No.	*Type	Pre or Post-Plate Treatment
P-1	Cadmium	
P-2	Cadmium	Clear post plate dip
P-3	Cadmium	Olive drab Iridite
P-4	Cadmium	Iridescent dichromate
P-18	Cadmium	Black post-plate
P-5	Zinc	
P-6	Zinc	Clear bright
P-7	Zinc	Olive drab Iridite
P-8	Zinc	Iridescent dichromate
P-9	Zinc	Supplementary phosphate
P-10	Silver	Nickel strike
P-12	Dull nickel	
P-13	Dull chrome	
P-14	Copper	
P-15	Tin	
P-20	Nickel phosphide	

*Thickness Ranges: A. 0.0002-0.0004. B. 0.0003-0.0005. C. 0.0005 min.

in a Big Way

Where to Use Popular Coatings

Cadmium: Provides good protection against corrosion, particularly in a salt atmosphere.

Applications: Aircraft bolts, nuts, special parts, bearings, textile equipment items, machine and auto parts, electrical appliance components, etc.

Chrome: Resists wear exceptionally well, has low friction properties.

Applications: Decorative chrome is chiefly for auto accessories. Industrial chrome is applied to a variety of tool-room and factory equipment—broaches, taps, reamers, spinning tools, drill jigs, files, rolls, cams, chuckheads, molds and drawing dies.

Silver: For decoration, it also prevents galling of mating parts and provides protection against excessive heat.

Applications: Dies, coil wire, bearings, industrial fasteners, musical, surgical and chemical-engineering instruments, surgical screws, tableware, food containers, jewelry.

Zinc: Slightly superior to cadmium in ordinary atmospheres, but less satisfactory under marine and tropical conditions.

Applications: Fasteners, textile equipment, radio and electrical equipment, auto parts, ventilation equipment, builder's hardware, hand tools, sporting goods, toys.

Tin: Resists organic acids corrosion and lubricates steel.

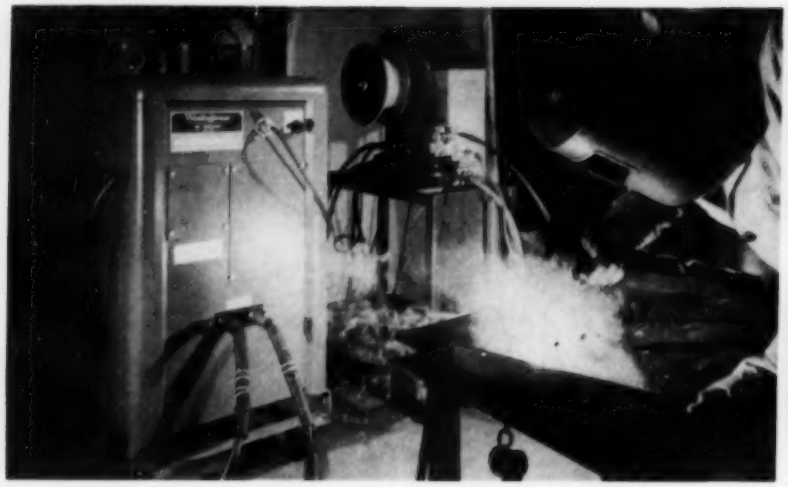
Applications: Cans, radio parts, radio and TV chassis, home appliances, electrical accessories, bearings, aircraft bolts, pressure plugs, hardware, fire extinguishers, etc.

Copper: Generally a lubricant, undercoat or a mask to blank off areas not to be case hardened.

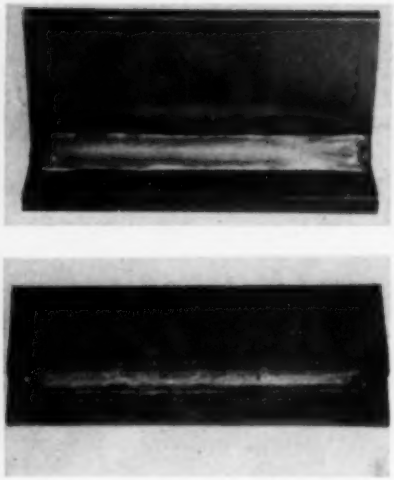
Applications: In addition to industrial processes, it is used on electrical equipment, builder's hardware and cooking utensils.

Nickel: Some finishes are for decoration, others for corrosion resistance, also undercoats.

Applications: Faucets, shower heads, builder's hardware, auto parts and accessories, electrical appliances, bicycle parts, kitchenware, tools, metal furniture, marine hardware, toys and novelties.



The new Westinghouse arc welding package has four major components—wire, welder, gun and control. All four are in action in the operation seen above



These four welds—lap, fillets and butt—demonstrate the appearance of

Old Process Refined

Making the process click is a new coated electrode with sufficient arc stabilizing qualities to make straight polarity operation possible. Result is fast burn-off

By C. H. JENNING
Engineering Manager
and
H. J. BICHSEL
Manager
Special Products Section, Arc Welding Dept.
Westinghouse Electric Corp.
Buffalo, N. Y.

HIGH SPEEDS, quality welds, low operating costs . . . are the advantages Westinghouse says you'll find in its new consumable electrode, inert gas arc welding process.

Key to the new process, which uses ordinary welding grade argon to shield the arc, is a coated wire called West-ing-arc MS-20. The entire package includes gun, wire control and a new constant potential power source—the RCP, 500 amp, dc arc welder.

Mild Steel, Too—The consumable electrode process has been used for several years to weld stainless steels, aluminum, and other nonferrous metals. Now you can use it as an economical way to weld mild steel. Among the results reported by the company is a weld that can be painted without cleaning. There is virtually no spraying or spatter; nor is there any slag covering on the weld.

With mild steels, with or without normal mill scale, it's used on thicknesses from $\frac{1}{16}$-in. up. Application can be semi or full automatic. Primarily intended for horizontal and flat position welding, the process has not been extended to vertical or overhead welding.

Straight Polarity — The wire is made of mild steel, in four sizes from 0.040 to 0.091 in. in diameter. Materials of definite composition are coated on the wire by a special manufacturing process.

Higher burn-off rates of straight polarity operation are usable only if major objections can be overcome. It's significant that use of straight polarity is made possible by the coating on the MS-20 wire. It's possible to take advantage of the higher burn-off rates because it stabilizes the arc, eliminates spatter and provides good penetration.

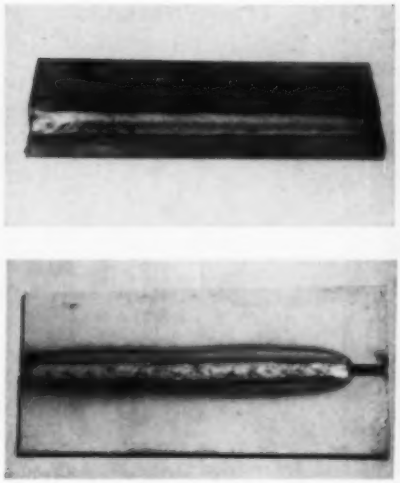
Deposition Rates — Deposition rates of MS-20 ($\frac{1}{16}$-in. diameter) wire and a typical ($\frac{1}{16}$-in. diameter) consumable electrode are shown in Chart 1. Arc stability and freedom from spatter make wire feed speed a direct measure of actual welding speed for a given size weld.

The company's conclusion is that it results in 15 to 22 per cent faster welding speeds.

Physical Properties — Table 1 gives typical values of physical properties from 80 to 200° F. The excellent physical properties at low temperatures indicate a weld low in contaminating oxygen and nitrogen.

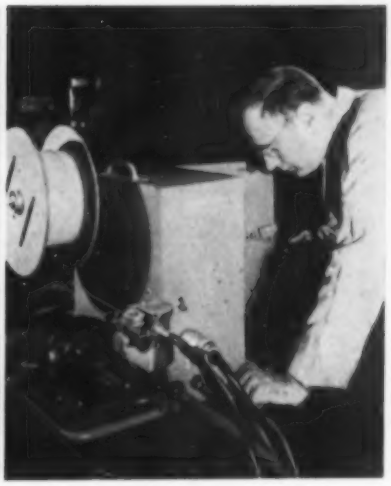
Operating Costs — In stabilizing the arc, the coating has its effect on operating costs. A major cost in an inert gas welding process is the shielding gas — in this case argon. Argon sells for about 10c a cu ft. Most inert gas processes use about 45 cu ft an hour. Westinghouse says its arc process uses about 30 cu ft an hour. Reason for the lower gas usage: Each time the arc fluctuates, air is drawn in past the inert gas shield, so more gas is required.

Inert gas cost is not a problem in manual welding, and the type of electrode used is less costly than that for semiautomatic processes. But characteristics of the Westinghouse process are sufficiently economical that it still results in less



the various types of work that have been done by the welding package

Control is built to be portable; it feeds wire to gun at a constant rate



Constant potential power supply can be used with any welding process

cost per inch of metal deposited when compared with manual methods. Figured into cost: Time for welding, cost of materials and time normally required for cleaning and grinding preparatory to painting.

Sighting Applications—Some of the most important uses include jobs where flux cannot be tolerated because of a dirt hazard—for example, refrigerator compressors. Another: Where flux cannot be held in place easily, such as small diameter circumferential welds. It may also be significant where it's desirable to see the weld or where numerous skip welds must be made.

It is not expected that the process will be applicable to high current submerged arc welding applications above 500 amp.

The Gun—The electrode gun—rated at 500 amp—incorporates excellent operating characteristics. Light weight and good balance hold down operator fatigue. It's built with no tubing exposed, is designed for high cooling efficiency.

Constant potential power supply is rated 220 to 440 v, 60 cycle, 3 phase. Its continuous current rating is 500 amp at 34 load. One advantage: The relatively flat volt-ampere characteristic which it produces. The drop from no load to full load is only 6. This helps produce maximum arc stability, as well as quick starting and recovery. It may be used with either consumable electrode, inert gas metal arc or submerged arc welding process.

Table I

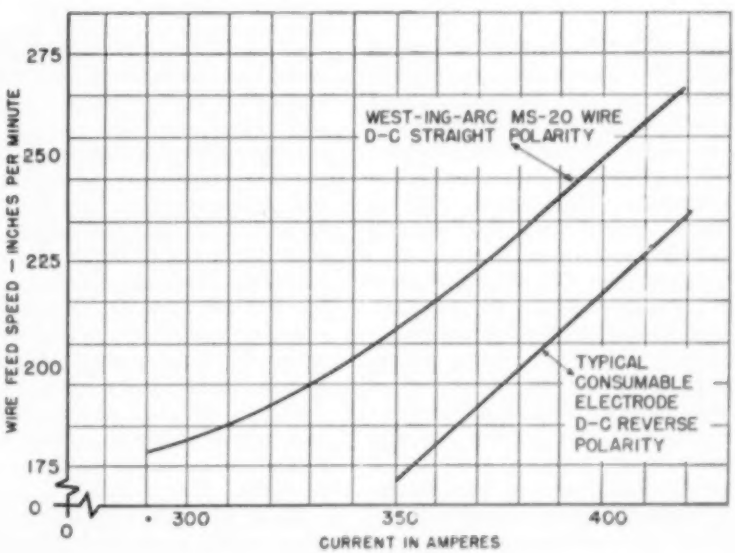
PHYSICAL PROPERTIES

Temperature—Degrees F	+80	0	−100	−200
Yield Point—Psi	63,200	81,700	90,000	109,200
Tensile Strength—Psi	76,000	92,400	100,600	111,500
Elongation (Percent of 2 in.)	27.9	25.85	25.50	27.13
Reduction in Area—Per Cent	69.4	69.90	61.30	57.90
Impact* West-ing-arc—Ft Lb	100.0	80.0	22.0	
Impact* E6020 Manual—Ft Lb	58	25	21.0	

* V-Notch charpy impact test

Chart I

DEPOSITION RATES



Charts posted in full view of operators create incentives of pride and competition

Case History on Quality Control

Psychology played a big part in the introduction of the program at Warner Gear, author told American Society for Quality Control in St. Louis this year

By FRANCIS E. JOLLIFFE
Supervisor of Inspection
Warner Gear Division of
Borg-Warner Corp.
Muncie, Ind.

OUR START in quality control was quite simple, perhaps unorthodox. After two officials attended a QC school and visited plants of customers, we made data sheets for inspectors in our grinding department. They were asked to submit reports on five random samples.

The group was chosen because of complaints from the assembly department. Parts did not go together properly; bearing diameters were oversize, causing extra work to drive them into place; or holes were under size, causing parts to go together too tightly.

Grinding also is a final operation—just before assembly and shipment to customers. Improvements could be passed on to customers in short order. Another consideration was that the departmental supervisor was progressive and always open to suggestions on cost reduction.

Green Light—Data sheets prepared by inspectors were sent to the author's office, where they were posted to gain experience with bar X and R charts (X: Permissible range of variations for the average part. R: Permissible range of variation in variability). After charts were made on about a half dozen parts, they were shown to the plant superintendent and general foreman. Both were willing to go ahead with the experiment.

Then we took our charts and plans to the president and general manager, asking permission to spend a little money for forms, charts and trial installations. Approval was given readily.

Incentive — We decided that charts should be in full view of operators; that floor inspectors should check parts and post charts. Space at the bottom of the chart gave the inspector room to show sizes of sample parts, plus averages and ranges.

We use the low blue print specification limit for 0 on the charts, making all samples read plus, unless they are undersize. The idea is to reduce the possibility of error by the inspector and help him plot more accurately in less time.

Average and range values are plotted with dots that can be seen readily by operators. There is a place for the inspector's initials and time and place of plotting.

A quality control program can account for decided improvement in most operations

These things are done to gain the confidence of operators and supervisors. If they think the inspector is in error, they have his record and can question it on the spot.

Kickoff—The first chart was on a honing operation in the grinding department (the hole in our overdrive pinion). Not a difficult job, it was checked by air gage.

Charts were explained to foremen of the production and inspection departments; they, in turn, discussed the project with their group leaders, operators and inspectors.

Then came the big day. Extra checking and plotting meant more work for floor inspectors. We did not remove bench inspection at this time, but after charts had been up a few days, bench inspectors noted fewer and fewer defectives, which, of course, reduced inspection.

Spreading Out — Next, we installed charts on an entire (overdrive output shaft) line—clutch teeth are ground to length, raceways for free wheel rollers are internally ground and two bearing diameters, plus spline diameters, are ground.

Our salvage rate had been quite high, and there was considerable scrap and re-operation. Scrap ran into a great deal of money because the part was expensive to make and these operations are at the end of the process.

After charts were made and explained to the foreman, he went over them with the group leader, telling him it was an experiment that might or might not last. The group leader expressed his willingness to co-operate.

Setup — The line worked three shifts, had three pairs of internal grinders and three operators at six machines on each shift (total of nine). All hands competed for the best looking chart.

We use colors to indicate shifts —blue dots for the first (midnight); black dots (day); and red dots (evening). The floor inspector did the checking and posting.

Bench inspectors were retained. Some final inspection is necessary to watch for missed operations or areas that do not clean up in the grind. Bench inspectors also count and bill out material after completion.

Original charts indicated blueprint specifications but not control limits. But the latter were soon added, requiring more explanation to operators. At first they felt we were cutting down their tolerances, but a little more explanation did the trick, and quality improved considerably.

Dividends—Records for the first several months showed scrap was reduced from about 1 per cent to about 0.1 per cent; re-operation from about 6 per cent to less than 0.5 per cent.

Among the things we learned is that internal grinders do not always grind to the low limit or external grinders to the high limit. Results were contrary to what most of us had been taught.

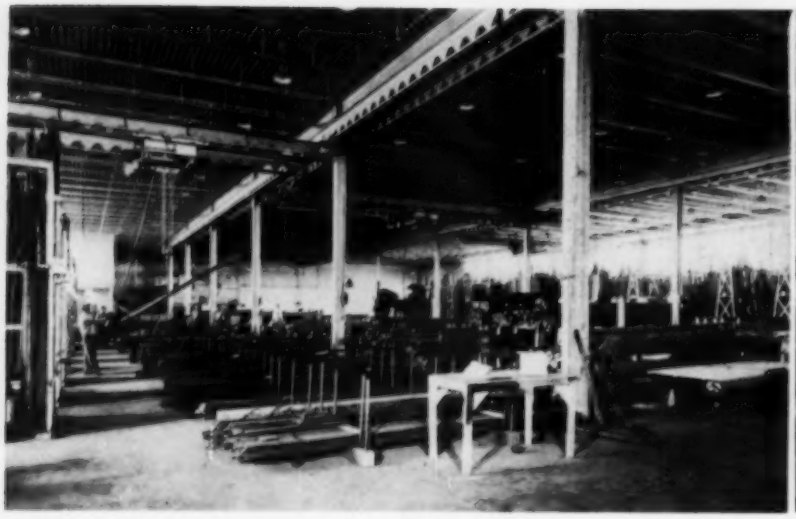
We, of course, had to replace go-and-no-go plug gages for the internal diameter with an air gage to get accurate direct readings that could be posted. Soon after charts were installed, grinding machines got considerable repair attention. A couple were even rebuilt.

Follow Up—Quality control has been extended to other departments, including blanking and cutting, assembly and receiving. We have about 475 bar X and R master charts, covering about 2000 different parts or operations.

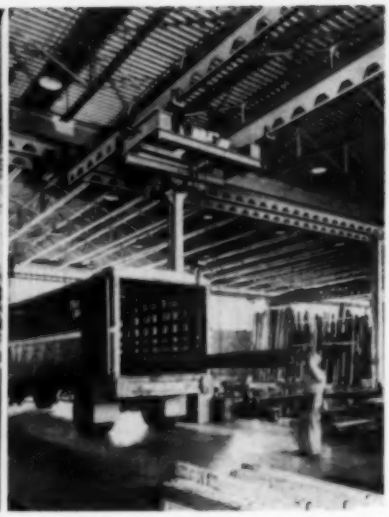
Masters are made on specially-printed vellum, with headings that include part number, part name, operation name, etc. Blueprint sizes and units of measurement are typed in the margin. Black and white prints are made from masters. We also have some universal charts, such as those on which runouts in gears are plotted. They are purchased.

Summary—Our daily inspection reports show a decrease in the number of pieces scrapped and re-operations. We also have proof that operations have improved.

Even if there has been no reduction in cost, there are fewer complaints from the assembly line, fewer test rejects and fewer customer complaints—all indications that our program has been worthwhile.



Complete area coverage at Crucible's Detroit warehouse is provided by three double-girder cranes in three bays

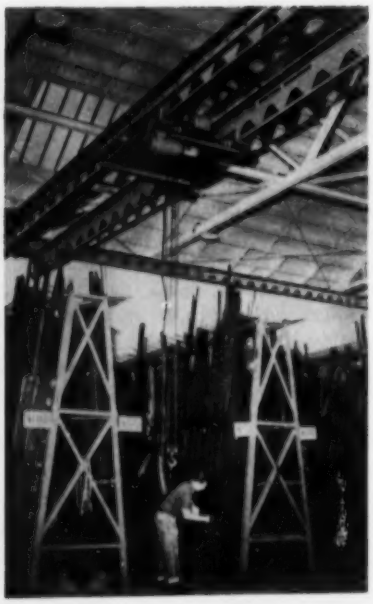


There's little lay-up time for trucks. This highway carrier took on an order for 4000 lb of steel in 15 minutes

STEEL WAREHOUSING

Showplace for Overhead Handling

Maximum use of storage space, fast free-running service, are characteristic of overhead equipment in steel warehousing. Crucible's three operations illustrate the point



Narrow aisles in vertical steel storage areas mean maximum use of space in the Los Angeles warehouse

ABILITY to reach stock fast, coupled with free-running layout and high load-carrying capacity has made overhead equipment readily applicable to steel warehousing. This faculty is exemplified perfectly by the three warehousing operations Crucible Steel Co. of America runs in Detroit, Indianapolis and Los Angeles.

All three are calculated to make maximum use of storage space and to hold down manpower requirements. Design and function of each are similar, although the Detroit location is the largest and uses three cranes instead of the two installed at Indianapolis and Los Angeles.

Multi-Purpose—As in any well-engineered overhead system, Crucible's equipment integrates several functions. It involves handling steel through receiving, storage, cutting for order filling and shipping.

It is sufficiently versatile to lift or stack more than 30 grades of steel in thousands of sizes from small-diameter rod to bars weighing several tons.

Each crane is controlled by a pendant pushbutton that makes it possible for the operator to follow his load from beginning to end of the handling job. Maximum use of space in vertical steel storage is another characteristic of Crucible's setup, since the operator takes the crane with him into aisles only 4 ft wide.

Specifications — All cranes used by Crucible, Whiting Corp.'s Trambeams, employ the Trambeam Vari-Pressure drive for runway travel at speeds to 150 fpm. Trolleys are powered by direct drive and move at 90 fpm on the bridge.

Electrification is with a 220-v, 3-phase, 60-cycle current and galvanized conductor bar. Hoist lift is 16 ft at 27 fpm.

How Continental Konik Steel Fights Fence Rust

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Full gauge, high-tensile strength Continental Fence wire is woven into exact mesh, then completely immersed in a temperature controlled bath of molten zinc . . . for a tough, rust resistant armor coat. This exact and specialized manufacturing process insures you a better looking, longer lasting fence year after year.

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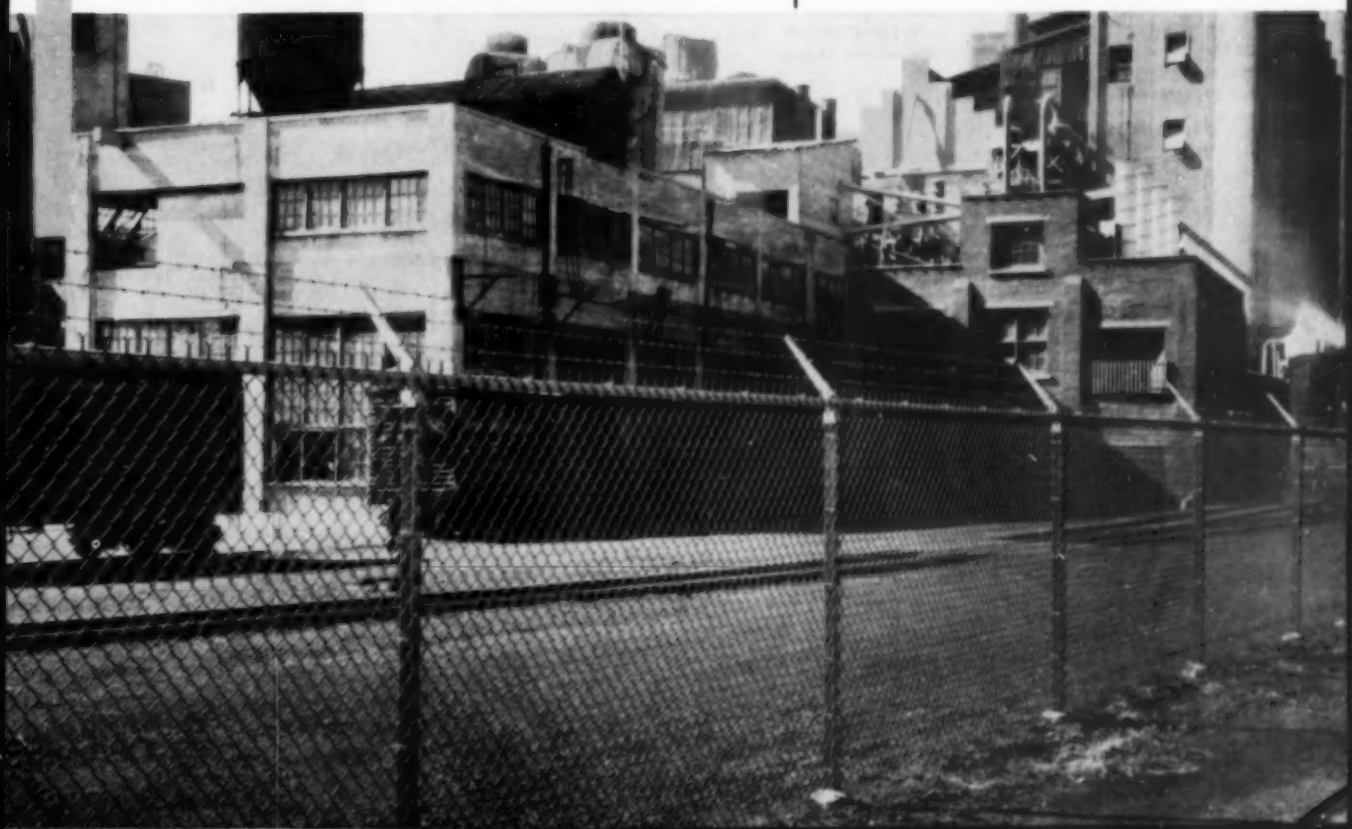

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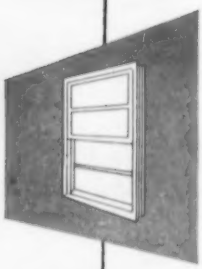
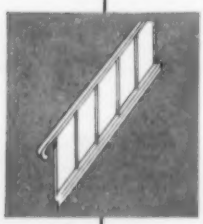


Prime Windows and Doors



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Transportation

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And the results: brand new horizons for designing.

Wolverine aluminum extrusions are light, yet strong. They can't rust, need not be painted. And most important, Wolverine can produce extruded aluminum shapes to your specifications. After all, Wolverine has done it with tubing for years.

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Be SURE to specify Wolverine extruded aluminum shapes

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CORROSION RESISTANCE

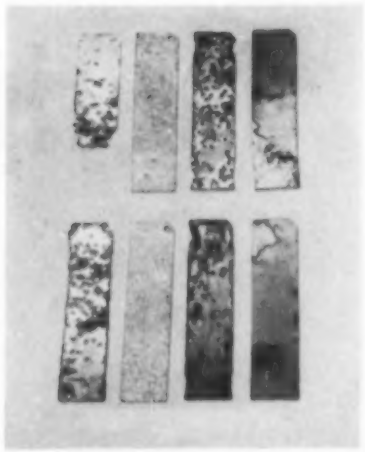
Titanium Is a Peak Performer

TITANIUM'S reputation as an all-round performer continues to improve.

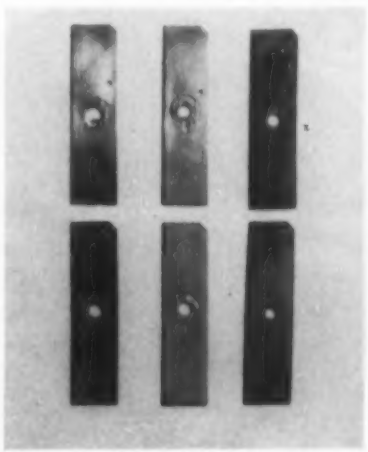
Recent studies on the metal's corrosion resistance show uniform peak performance under several different conditions. The Electrochemical Society's *Journal* summarizes work done over a 5-year period at Kure Beach, North Carolina, where tests were run on the behavior of titanium and several common structural metals.

The Rem-Cru engineers who conducted the survey report titanium unaffected after exposure to sea water corrosion, galvanic corrosion, pitting stress corrosion and corrosion fatigue.

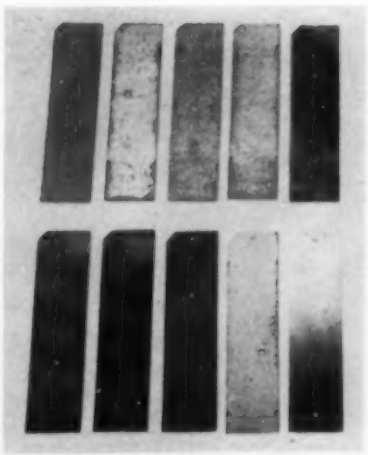
Titanium coupled to Inconel, silver and types 302 and 316 stainless had a negligible effect on corrosion rates of these materials. But corrosion rates of Monel, copper, low-carbon steel and aluminum alloys were more than doubled in some cases.



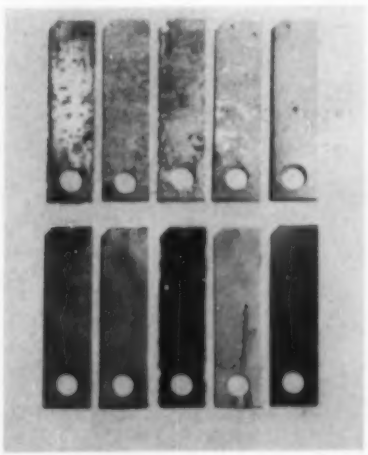
In flowing sea water 1 year, 253 days. Left to right, top and bottom: 24S-T3; 53S-½H; Monel; 347 stainless



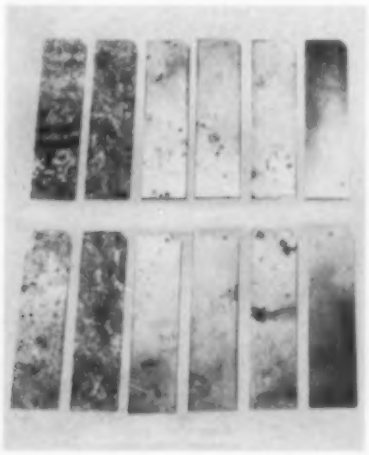
Crevice corrosion test in quiet sea water. Left to right, top and bottom: 302 stainless; 316 stainless; titanium



Five-year exposure, 80 ft from ocean. Top, left to right: 24S-T3; Alclad 24S-T3; 52S-½H; Alclad 75S-T6; 302 stainless. Bottom: 316 stainless; 347 stainless; Monel; Inconel and titanium



Immersed in quiet sea water 480 days. Top, left to right: 24S-T3; Alclad 24S-T3; 52S-½H; Alclad 75S-T6; 302 stainless. Bottom: 316 stainless; 347 stainless; Monel; Inconel and titanium



These materials were exposed 4½ years to flowing sea water. Left to right, top and bottom: Alclad 24S-T3; Alclad 75S-T6; 302 stainless; 316 stainless; Inconel; and at right is titanium

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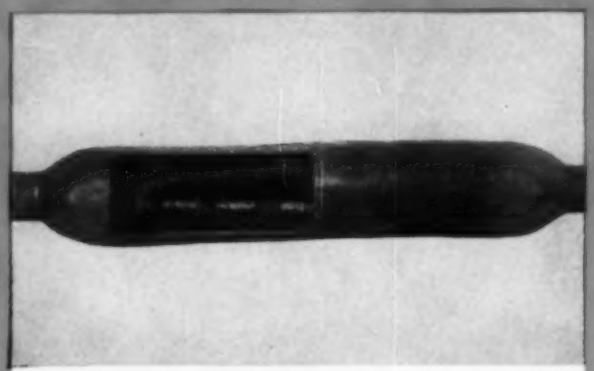

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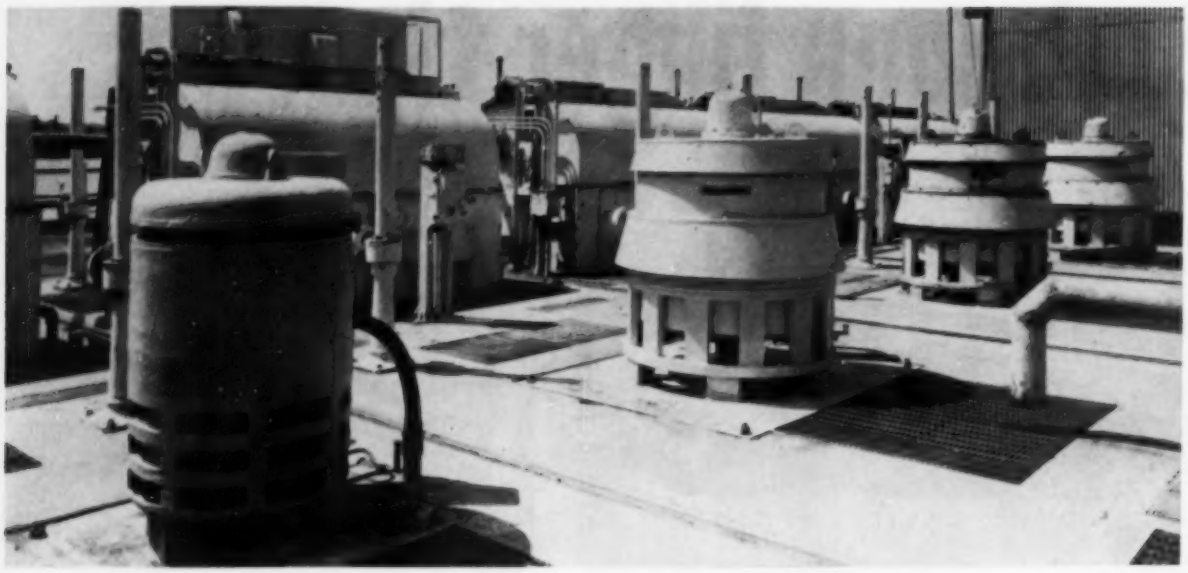


A few of the Fairbanks-Morse motors that drive the pumps in the Fairless Works water system. Behind them are traveling screen drives

Formula for Water

Designers remembered the neighbors downstream as well as their own exacting demands when they planned the Fairless Works water treatment system

IN THE HULLABALOO that attended the opening of U. S. Steel's Fairless Works one feature was largely overlooked — 230 million gallons of water. That's what the works takes out of the Delaware River every day, and returns to the river no worse for the use.

This borrow-return-borrow business goes on day and night. If an emergency were to cut off the supply, the plant would have to shut down immediately. Damage to blast furnaces and open hearths would be costly and serious.

Four Systems—To avoid catastrophe, U. S. Steel has equipped the Fairless Works with three different systems: One for portable and sanitary water with a daily consumption of 4 to 5 mgd; one for special processes that require high quality water with an average consumption of 15 mgd; and one for general industrial service with a consumption of 230 mgd.

Heart of the system is an underground pumping station on the banks of the Delaware River in one small corner of the 3800-acre plant. From here ten Fairbanks-Morse and two Peerless turbine and propeller pumps deliver the daily load. They are equipped with Fairbanks-Morse electric motors (150 to 1000 hp).

On Guard — Four major defenses guard against loss of water owing to power failure or other causes.

First, if power fails, two steam turbine centrifugal pumps in the steam power house can supply 70 mgd to the steel mills, permitting minimum production until power can be restored and preventing costly damage to furnaces. The pumps draw emergency water from the river or the pumping station's 44-million gallon settling basin, which doubles as an emergency storage tank.

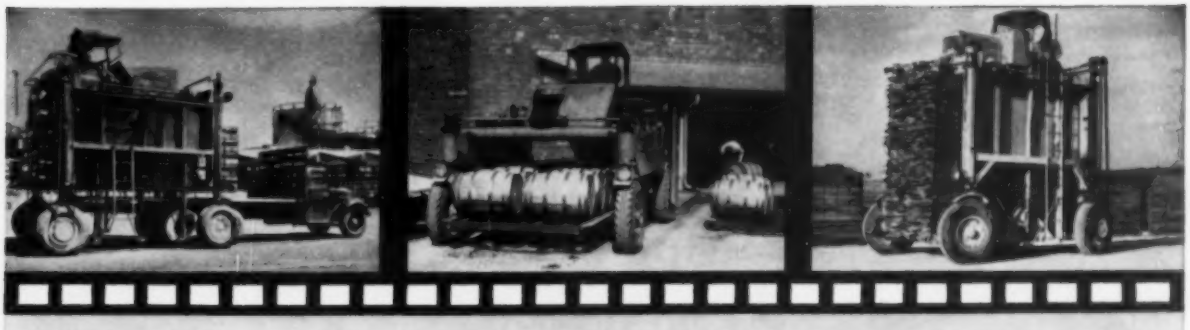
More Safeguards — Second, the plant's 60,000-kw steam power house is backstopped by Philadelphia Electric. The Fairless Works purchases about one-third of its annual consumption from them; in an emergency it can assume the plant's entire load.

Third, the cellular construction of the concrete pumping station permits each cell to be dewatered for inspection and maintenance. If necessary, a piece of equipment can be removed without interrupting other units.

Fourth, all water, sewage treatment and pumping facilities are concentrated within an area 2200 by 1400 ft along the river bank assuring an installation automatic and trouble free as possible.

Intake—The pumping station is built entirely below grade on the banks of the river. The operating floor is about a foot above grade and 20 ft above normal water level —2½ ft above the 200-year flood stage.

Two sets of intake ports at the



One man loads it . . . in 3 seconds, up to 50,000 lbs. . . .

One man drives it . . . speeds up to 56 mph

One man unloads it . . . in 3 seconds

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You can revolutionize your handling operations! You can move materials faster, farther, at less cost, and this new movie shows you how to do it. As in the above pictures from the film, you'll see the Ross Carrier handling pineapples, whiskey barrels, lumber packages, heat exchangers, cotton bales, steel tube—for aggressive, cost-conscious companies which have discovered the unique advantages of over-the-load handling. If you are sincerely interested in knowing what's new in materials handling, you won't miss this free movie. It's available on a loan basis—simply send the coupon to reserve your showing. We'll mail the film to you—your only cost is return postage.

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Send "Over-the-Load" movie for showing on (give 2 choices):

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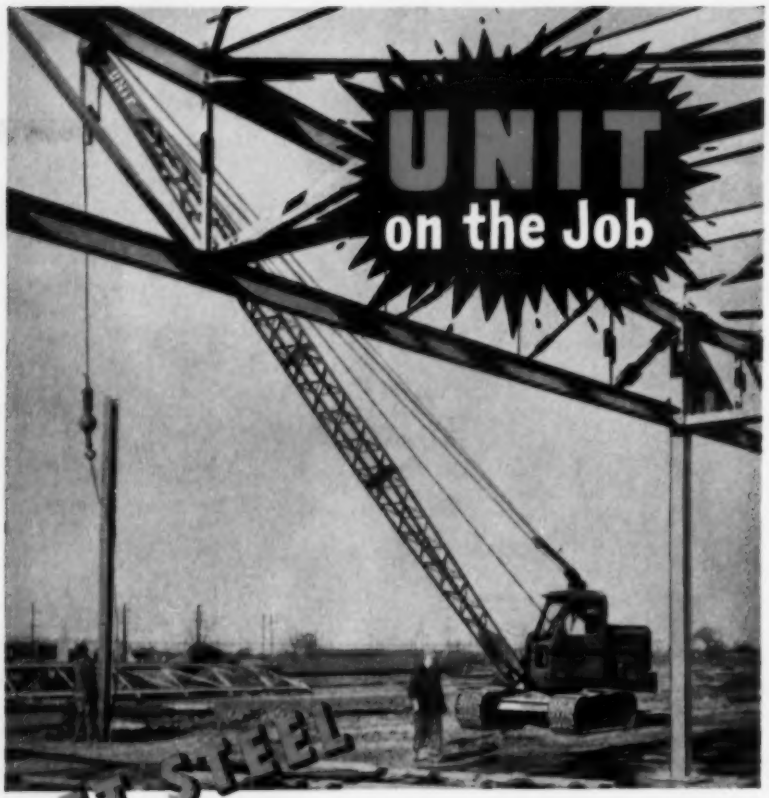

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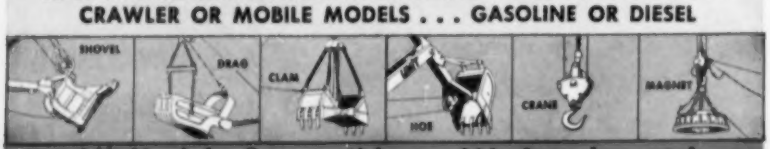
½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attachments!

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PROGRESS . . .

station permit continuous operation despite seasonal river levels.

Screened and Settled—After entering the station, water passes through a system of bar racks and traveling screens (they protect pumps from large solids) and is lifted to a distributing chamber by six low-lift propeller pumps. It then passes through an upper flume to the station's 44-million gallon settling basin for one-hour detention.

From the settling basin two-thirds of the water flows by gravity to the steam power plant, where it is used for cooling surface condensers. One-third is sent through the plant's service water distribution system.

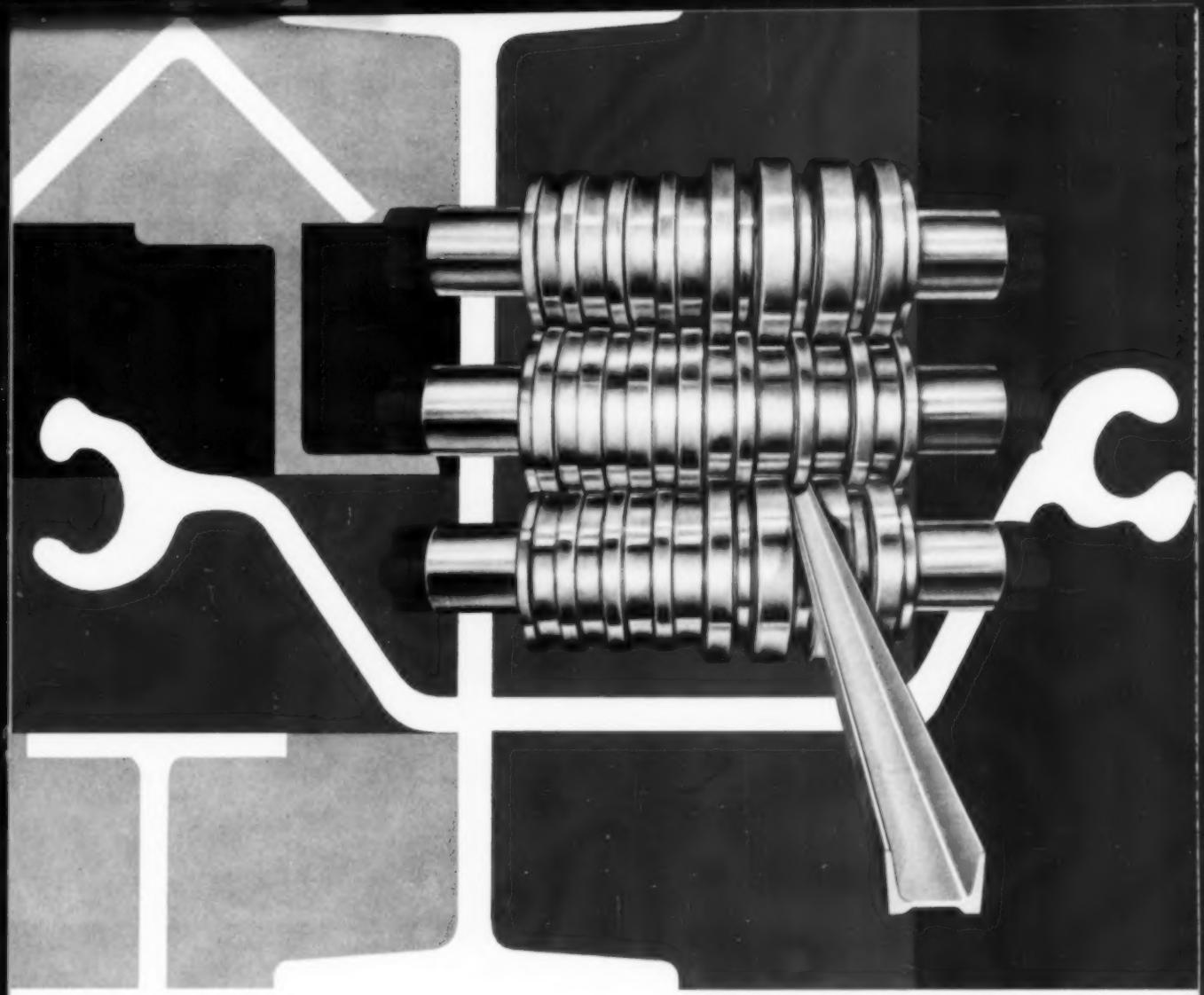
No Slime—Water for the steel mill is shock chlorinated at the pumping station to keep slimes out of the pipelines. The network supplies water to cool the mill's blast furnaces, open hearths and coke plant, to flush scale in the hot rolling mills and to do other tasks at rolling and cooling facilities.

Process water for the sheet and tin mill area, of necessarily higher quality than river water, is drawn from two deep wells. It is distributed at 60 psi by two vertical turbine pumps. Consumption averages 15-mgd.

For Drinking Too—Potable and sanitary water is collected through an independent system—a Rainey water collector driven to a depth of about 50 ft near the river.

Water from all three systems is used in the treatment of about 80 mgd of sewage and industrial wastes. One treatment and disposal station serves sanitary sewage; one serves wastes from the sheet and tin mill; and the third serves effluent from the sheet and tin mill, plus untreated wastes from the hot rolling mills and other plant units.

So ends the borrow-return-borrow cycle. In its detour through the Fairless Works, the river water is pumped under pressure through more than 25 miles of steel, cast iron and concrete pipe—all more than 6 in. in diameter. This mileage does not include smaller diameter pipe, of which there is a proportionately greater amount.



High tonnage schedules in structural mills call for the stamina of

MACK-HEMP STRIPED RED WABBLER ROLLS

Skilled operators know from their records that they can depend upon MACK-HEMP Rolls to produce clean, accurate structural shapes on a high production basis. They know, too, that MACK-HEMP keeps in close touch with mill practice developments and with roll designers and mill operators to produce rolls that assure low cost operating.

This is being proved in practice in most prominent mills today, both large and small, by the strong, tough Midland Superalloy Rolls in roughing stands and the wear-resistant Midland Supermetal Rolls in intermediate and finishing stands.

Continuous developments in metallurgical and manufacturing practices make it increasingly worth your while to keep an eye on what's new and different at MACK-HEMP.

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(Advertisement)

BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

Bridgeport Brass Co.

Reporting new developments in copper-base alloys and metal working methods.

Bridgeport copper-base alloys used in sprinklers give portable irrigation systems strength and corrosion resistance—characteristics which afford many years of trouble-free, economical service. (Courtesy of Rain Bird Manufacturing Company.)

"Push-Button" Rain

Uses Brass Alloys for Dependable Service

Two years of severe drought in many sections of the country have more than tripled the market for non-ferrous alloys in portable sprinkler irrigation systems.

Farmers everywhere are taking the sting out of dry spells...getting up to four or five times the yield per acre with easily controlled, "push-button" rain. Latest estimates indicate that over 3 million acres of cropland are now being irrigated by sprinklers. That's nearly a five-fold increase over 1950, and this is just the beginning. Copper base alloys as well as aluminum account for much of this phenomenal growth.

Copper Alloy Sprinklers

In water service, copper and its alloys have proved far and away the most superior material for their cost ever developed. Bridgeport copper-base alloys, in addition to their outstanding resistance to water corrosion, erosion and scale, offer manufacturers maximum fabricating ease in virtually every production operation.

The irrigation sprinkler shown above is fabricated almost entirely from brass and bronze for greater durability and longer trouble-free service. Nozzle and connection fitting are machined from Bridgeport's Ledrite Brass rod (Alloy No. 6). This alloy revolutionized screw machine production because its exceptional free machinability allowed large increases in production speed and at the same time actually reduced tool wear to new lows.

Long lasting spring properties and excellent resistance to weathering are imparted to the spring component by Bridgeport's Silicon Bronze Spring Metal, a tough, stiff, long-wearing alloy ideally suited to outdoor use. The body and impact oscillator arm are machined from cast bronze on specially designed, high speed machines.

The result is an irrigation sprinkler that is highly resistant to the corrosive and scaling effect of mineral-bearing water. These alloys will not rust. Instead they protect themselves by forming a thin film on their exposed surfaces which prevents corrosion.

Reliability Important

Sprinkler systems used to be prohibitively expensive. The introduction of lightweight, aluminum irrigation pipe permitted portability, and this cut the cost of sprinkler irrigation by more than two thirds.

Nevertheless, since each irrigation project requires an individually engineered system, it does represent a substantial investment. Manufacturers have to be sure that component parts will not fail under the adverse conditions they often encounter. For that reason, only copper alloys with a record of successful performance under such conditions can be specified. Bridgeport Brass has been producing quality copper base alloys to meet these and other requirements for many years. And now Bridgeport's Aluminum Division is a supplier of a complete line of quality aluminum irrigation pipe.

The superior strength of Bridgeport Aluminum Irrigation Pipe gives full protection through the entire range of system pressures. Its lightweight rigidity is ideal for fast, easy movement, while its resistance to water corrosion assures many years of full-flow, trouble-free operation.

Research and Service

These and other Bridgeport metals are the result of extensive laboratory research worked out in cooperation with various industries. Engineered for performance, they offer the kind of long-term realistic economy that spells better products, lower costs and higher profits right down the line from fabricator to consumer. Bridgeport's Technical Service and Metallurgical Laboratory are always at your service to help solve your metallurgical problems and to recommend the most advantageous alloy for your application. Contact them at any time through your local Bridgeport Office. (2589)

Bridgeport Brass Co.

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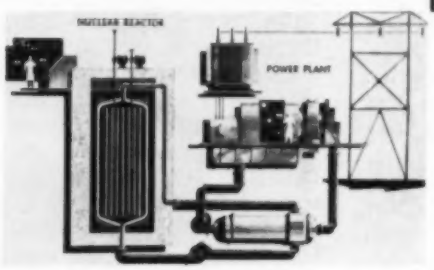
. . . . .

Sodium Graphite Reactor For Atomic Power



IF YOU ANALYZE the cost of power from atomic plants, you'll find that the fixed charges dominate costs. Bright ideas are needed on how to build cheaper nuclear reactors and heat extraction systems and how to get the maximum thermal efficiency from a plant.

The advice comes from Chauncy Starr of North American Aviation, Inc., which has a full scale nuclear manufacturing department in operation. Speaking before the National Industrial Conference Board's recent meeting on atomic energy in industry, Mr. Starr, with the goals above in mind, voiced high hopes for liquid sodium metal as a heat transfer medium. While solid at room temperature, it melts at 208°F. It is easy to keep liquid in a power plant system.

Because liquid metals, sodium in particular, have extremely high thermal conductivity, they are excellent heat transfer media. The fluid dynamics of liquid sodium is similar to water. A further advantage of sodium is the general absence of chemical corrosion in metal systems, which means that a wide variety of steels and alloys can be used in construction.

Disadvantages—It has some. It reacts chemically with oxygen and water. When exposed to neutrons in a reactor, it becomes a radioactive gamma ray emitter with a half-life of about 15 hours.

This problem of induced activity gives a serious handling problem in nuclear power plants.

Potential—Because of the general characteristics of sodium, North American believes that the sodium graphite reactor and its heat extraction system will eventually permit: 1. Production of steam temperatures that will be limited only by turbine performance. 2. Simplification of the reactor cooling system to an extent approaching low pressure water systems.

Mr. Starr continues: "Our organization feels that . . . sodium graphite reactor . . . is a best choice at present . . . in fact, full scale plants could be built today, although not in their optimized form . . . lines of development

may make it a successful competitor with other reactors in the long term. . . ."

Not Cheap—But keep in mind, like all things atomic, a liquid sodium system is an expensive item today. Present cost of a sodium heat extraction system is about equal to the reactor alone.

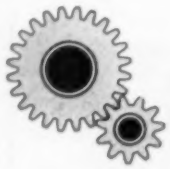
This is primarily due to the fact that the components use laboratory type fabrication and instrumentation, and unusually tight specifications on detail. Costs will certainly go down as industrial practice in this field is developed.

Safe — Another factor on the side of this reactor is its inherent safety features. Every nuclear reactor contains a large amount of radioactive material. However, dispersal of this radioactive material is not a necessary consequence of an accident unless a major source of energy present forces it out.

Generally, the most consequential force behind dispersion is not the nuclear energy released in an accident. It's either the potential energy stored in the pressure systems or the chemical energy released by interaction of the reactor and cooling system components. In the sodium graphite type, absence of stored energy due to pressure and lack of reactive substances minimize chances of dispersion of radioactive materials.

Started—North American and AEC are building an experimental reactor with a heat output of 20,000 kw. It contains an active core about 7 ft in diameter and 6 ft high. If this was enlarged to a 10 ft high, 11 ft diameter core, the unit would produce about 100,000 kw of salable power, in addition to a considerable amount of byproduct plutonium.

For central station use, it might be desirable to operate two such reactor cores in parallel. Then the plant could be run at 50 per cent rating during fuel loading and unloading and at times of low power demand. Steam temperatures would be in the range of 750 to 1000°F, depending on economics of plutonium production and fuel costs. Capital cost of such a plant is estimated between $250 and $300 an installed kw.



MACHINE TOPICS

BY R. F. HUBER, *Machine Tool Editor*

YOU CAN toast the old by observing the new. This seeming paradox sums up what Cincinnati Milling Machine Co. is doing to celebrate its 70th anniversary.

Their anniversary celebration, actually a series of specially-arranged tours extending to late in the year, takes cognizance of the fact that the stature of the company today is credit both to the founders and to those persons who have since been part of the organizaton.

Old and Young—Most important, though, to the people at "the Mill" is the fact that both concepts and facilities make them young. They're liable to bristle just a bit if you call them a "fine old concern."

The plant tours are intended to show their guests just how young the company really is. Starting with greetings by President F. V. Geier, the tour heads off through the engineering and headquarters building, main plant, heavy machining plant, foundry, products division and process machinery division. Since the tour is measured in miles, much of the distance is covered in small motor-powered trains.

Future — Completely new training facilities are on the route. The training center with its shops, class rooms, interview rooms, auditorium, etc., provides a large increase in area for the 21 courses being taught.

Hint of the future is tied into the anniversary party with the announcement of five new machines: New line of HyPowermatic milling machines, Toolmaster milling machine, a new No. 2 centerless grinder, No. 0 centerless grinder and a No. 1 cutter and tool grinder.

New Movie

It's no longer a secret that the machine tool builders feel their big market potential for the near future lies in the intelligent replacement of obsolescent equipment in all plants. While their angles for getting at this market might vary from time to time and from plant to plant, the goal is the same—get rid of the junkers.

Cincinnati Milling Machine Co. is showing one of their new schemes for education on the evils of obsolescence. It's an animated movie called "William Johnson and the Draggin". Hero of the plot is Bill himself, who shows up the villain Draggin. Draggin has been spending his time bogging down production. You will be interested to know that all ends happily when the king shoos the draggin with efficient equipment. This one is recommended for your whole production family.

Orders Up

Figures published by the National Machine Tool Builders' Association show that machine tool orders are up from August's 147.9 to 179.8 (estimated) for September. Data is based on an index; 1945-'46-'47 equals 100. Statements by some builders indicate that orders for October will be comparable to those for September.

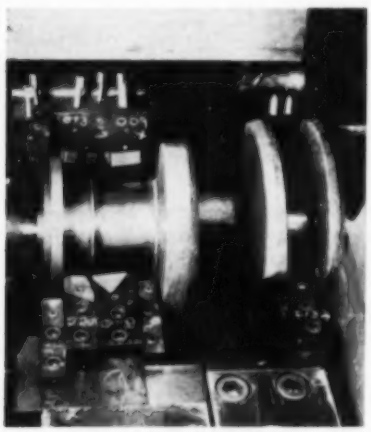
At the same time, the order backlog held its own at about 3.2 months for the industry.

Machining Crankshafts

CAST STEEL crankshafts—the auto industry's first—have been machined successfully by applying carbide tooling to the job. Work was done on Wickes center drive lathes with Wesson band-type multicut holders and carbide.

Cast steel cranks will go into full production on this setup at Wickes Brothers' plant in Saginaw, Mich., in time for use by a major automaker on a 1955 model.

Modified Tooling—Tool research and crankshaft development resulted in several modifications incorporated in the setup. On the nodular iron crank machining work 34 tools are required to turn all five main bearings, flange and stub ends. Only 25 multicuts



MACHINERY SETUP
. . . 25 multicut tools on slide

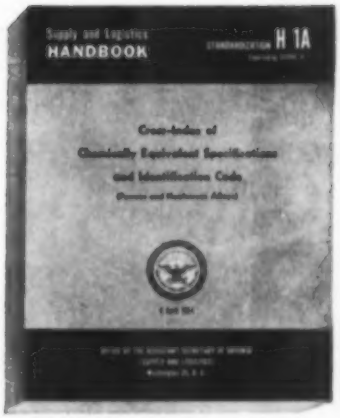
mounted on two slides are required on present steel crank tooling.

A third slide, consisting of additional multicuts, is designed to check the throws when required on nodular iron. On the steel setup, dual insert holders turn the mains and journal fillets, and are also designed to perform checking when required.

Accurate Casting—Close tolerances achieved by the crankshaft manufacturer, Auto Specialties Mfg. Co. Inc., make it unnecessary to touch the throws.

The Wickes lathe is equipped to feed hydraulically with automatic work cycle control.

More Help With Metal Specs



YOU NEED all the help you can get these days to untangle metal specifications.

You can get it from the new revised cross-index of chemically equivalent specifications for steel and nonferrous alloys, just published by Department of Defense.

It's a 345-page reference book that defines and compares the compositions of all metal specifications. It will save you valuable production and engineering time by curbing confusion about the various specification systems.

Scope—Listed and cross-indexed are specifications of Army, Air Force, Navy, AISI, Dept. of Defense (MIL and JAN), ASTM, SAE, Aeronautical Standard Group, General Services Administration (Federal), Aeronautical Material (SAE) and Aluminum producers.

Metals included are iron and steel, copper, nickel, cobalt, titanium, lead, tin, silver, aluminum, magnesium, zinc, bismuth, cadmium, antimony, gold, platinum and their alloys.

Up-To-Date—The handbook is a revision of a previous cross-index completed late in 1952. A realization of the need of the metalworking industry for a complete rundown on metal specifications led STEEL to undertake publication of its Specifications Handbook based on the government's 1952 edition. Over 20,000 copies of STEEL's handbook were distributed, but the supply is exhausted; and because of revisions included in the new edition, it will not be republished.

How—To keep posted on the latest information on specifications, you can obtain copies of the new government handbook through STEEL's Readers' Service department, or from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Cost is $1.75 per copy, postpaid, payment with order.

When ordering from the Government Printing Office, ask for Supply and Logistics Handbook H 1A, "Cross-Index of Chemically Equivalent Specifications and Identification Code." When ordering through STEEL, use coupon below.

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Send me_____copies of the government's Cross-Index on metals specification at $1.75 per copy, postpaid. **Enclosed is my check for**_____.

Name ..... **Title** .....

Company .....

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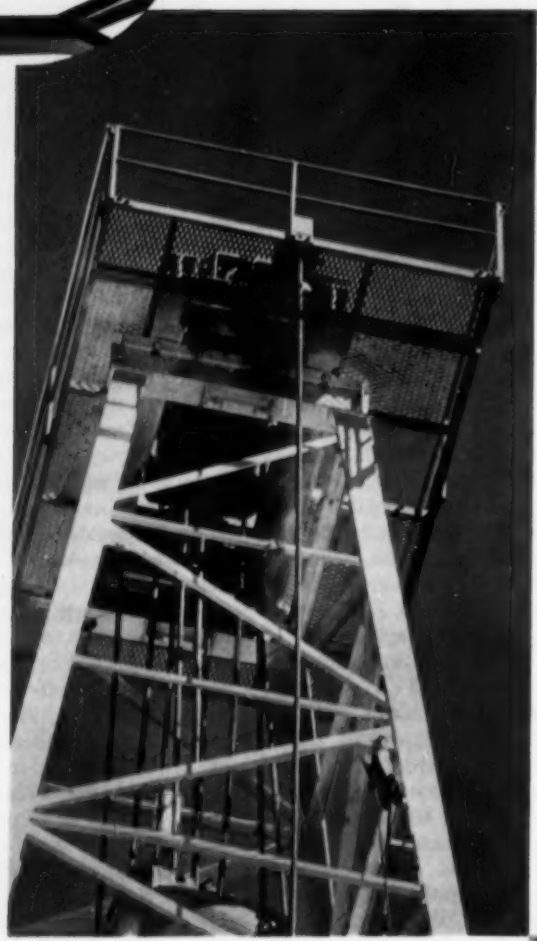
This is the GRATING of ECONOMY

for walkways, catwalks, floors, platforms



Platform flooring for Derrick Structure.

Penmetal gratings are made from heavy steel sheet and plate. The sheet or plate is slit and expanded to form a strong, durable, lightweight surface, capable of supporting walking loads on spans up to four feet, or reinforced for longer spans.

The expanded steel actually deflects less under load than the original sheet. Yet cost is low. Penmetal gratings are not punched, welded, bolted, woven or interlocked. You do not pay for costly fabrication.

Because they are an open mesh, Penmetal gratings do not block light and air. Dirt, grease, snow and mud cannot collect on the walking surface. In addition, the ridges of the steel strands make them true, non-slip flooring. Light in weight, they are easy to handle and erect.

Send for complete details of this open steel flooring of economy. Just fill out the coupon and mail it today.

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General Sales Office: 205 E. 42nd St., New York 17, N. Y.
Plant: Parkersburg, W. Va.

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Catwalk over open tank in oilfield.

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205 East 42nd Street, New York 17, N. Y.

Please send me, without cost or obligation, a copy of your new folder, "PENMETAL EXPANDED METAL GRATINGS".

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Company.....

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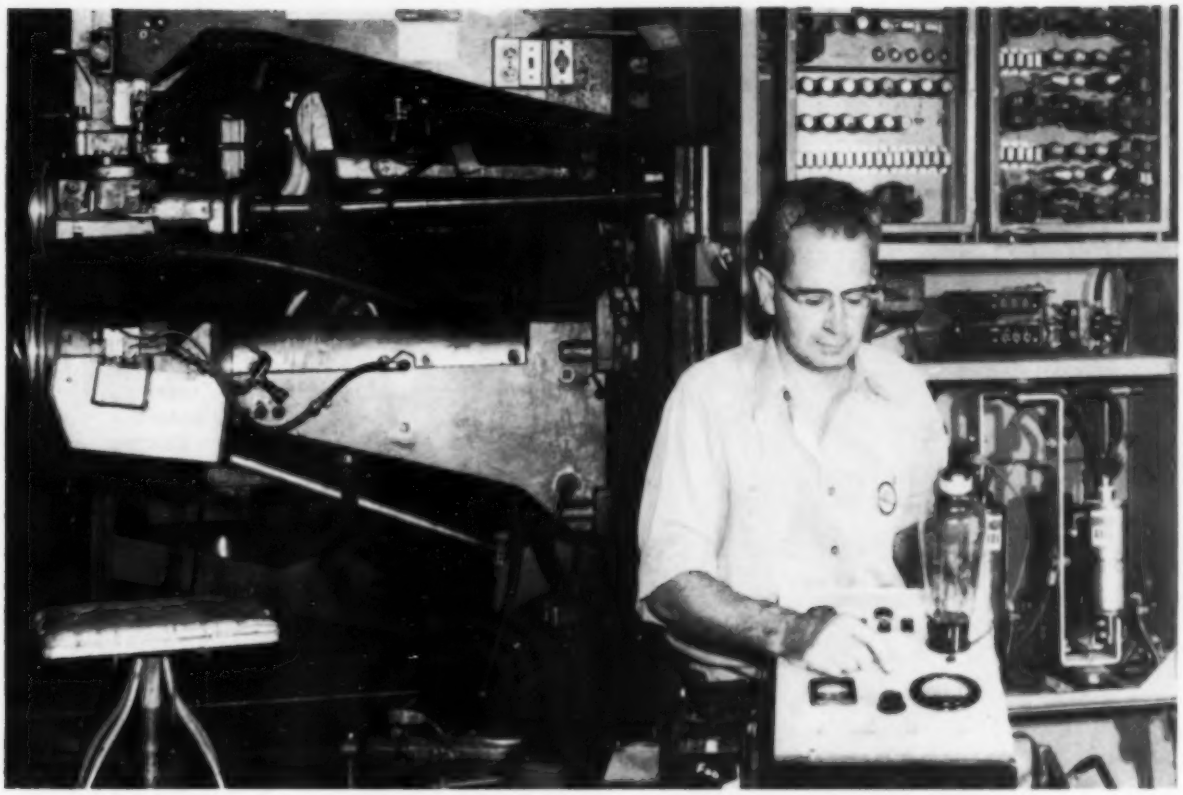
City.....State.....



In front of the resistance welder in which it plays such an important role, a $55 thyratron tube gets checked on Ryan's home-made tester

New Life for Old Thyratrons

A RESISTANCE WELDER with an ailing thyratron is a tool with a bad heart. Things may appear to be going just fine, but there's a constant sense of insecurity. And, too often, at a critical moment the heart gives out.

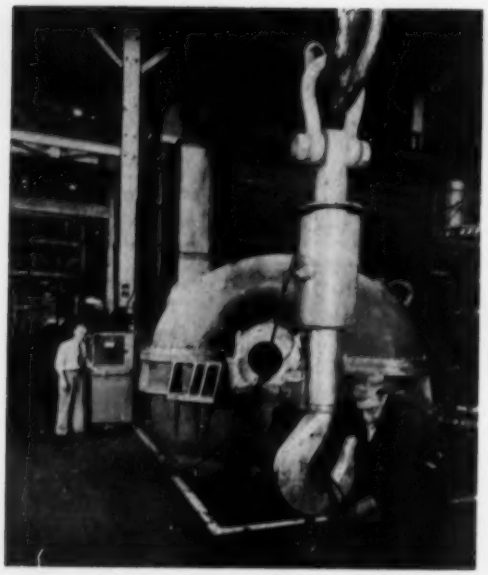
Maintenance men at Ryan Aeronautical Co., San Diego, Calif., had been doing what can't be done with human hearts—switching suspect thyratron tubes. When one didn't work right in one machine it sometimes worked in one of the 99 others. They gathered a big stock of the expensive tubes ($8 to $55) that were maybe good, maybe bad —no one was quite sure.

Tester to the Rescue—That's when they developed a portable tester to check the big tubes that control the current in the welders. The tester operates effectively on 600 v although the tubes handle 2000 v in the welders.

It was designed by electrical maintenance personnel and fabricated from used, surplus materials. It contains relatively few parts, including a transformer, grid circuit, resistors, voltage regulator tube, rectifier, ammeter and voltmeter. The ammeter was modified to register from zero to 5 amp and the voltmeter modified to register from minus 20 to plus 20 v.

In thyratron tubes a voltage of less than 10 v on the grid acts as a sensitive switch to block the heavy electron flow between cathode and plate. The tester varies the grid voltage and shows at what voltage the tube will "fire".

No More Guessing—Now when a resistance welder acts up, the tester indicates in a few minutes if a thyratron is at fault. Since the tester shows exact control characteristics of a tube, it's been possible to check the large stock of questionable tubes that had accumulated. Some went on the scrap heap, but many are tagged for limited jobs they can still perform.



Crane scale is rigged for weighing turbine housing

TIME IS MONEY

They Took the Easy Weigh

THERE WASN'T MUCH PERCENTAGE in moving mountains out to the track scale in the yard at the River Plant in West Lynn, Mass., General Electric Co. decided. Not when they could hang a scale on any crane in the plant.

Now, a Baldwin-Lima-Hamilton crane scale has taken over the job of weighing the big ones. It consists of a tension type load cell of 100,000 lb capacity with a clevis at the top to put over a crane hook and a hook at the bottom to pick up the load. It can be taken anywhere.

The scale can be read to 50 lb; accuracy is within 0.2 per cent for loads above 15 tons. The unit has cut weighing costs 10 per cent and weighing time at least 20 per cent.

While lift truck unloads, tow truck delivers a train

Lift Trucks Lift—Tractors Tow

THE OTHER FELLOW'S JOB may look simple, but you can't do his and yours, too. That's what Solar Aircraft Co., San Diego, Calif., decided. Its lift trucks were spending too much time hauling, as well as lifting and tiering.

Now lift trucks lift and tow trucks tow and everybody's happy. Four Clarkat tractors (Clark Equipment Co., Battle Creek, Mich.) haul trains of incoming materials to production areas and manufactured parts from production to the shipping dock. The lift trucks do no horizontal handling—just loading, unloading and stacking.

The new order increases the speed and efficiency of material handling without adding to the truck fleet.

Carload of cartridges gets scooped out in a hurry

Nothing Like the Right Tools

THE RIGHT TOOLS make the difference, Bridgeport Brass Co., Bridgeport, Conn., knew well enough. Still, it was doubly convincing to see a special scoop on a lift truck unload a car of scrap in 6 hours, cutting loading time cost 80 per cent and increasing efficiency per man over 500 per cent.

The lift truck was just one of 30 Towmotor trucks (Towmotor Corp., Cleveland) that have been speeding up material handling around the Bridgeport plant. Some are specials: One with a ram carries 6000 lb loads of coiled rod up 9 per cent grades. Another with notched forks carries and lifts 11,250 lb loads of billets to the saw table.

Special or standard, they're demonstrating that tools that cut time cut costs.

Put YOUR Men in this Picture....
ERIE Board Drop Hammers
HELP HAMMERGANGS
DO THEIR BEST • • •
ERIE
ERIE
ERIE
ON ERIE HAMMERS ALL STRESSED PARTS, UPPER WORKS, FRAME AND ANVIL ARE STEEL.
ERIE FOUNDRY COMPANY • ERIE, PA.
ERIE BUILDS Dependable HAMMERS

General view of Engineering Department

Alliance anticipates tomorrow's increased production demands

Engineering, South End

Research Engineering

Engineering, North End

The Alliance Engineering Department is organized to assist industry in solving its material handling problems. Many of the safety and mechanical features now accepted as standard practice on steel mill cranes had their inception in the Engineering Department of The Alliance Machine Company.

Alliance cranes lift and position the smallest loads up to and including 450-ton ladles of molten metal and 600-ton battleship turrets. From Pittsburgh, Pennsylvania, to Jamshedpur, India, Alliance cranes are handling the world's heaviest loads.

When you are considering tomorrow's expansion program, The Alliance Machine Company's Engineering Department is always ready to render any assistance necessary. Our more than half a century in the field of material handling qualifies us to solve your problems.

World's Largest Builder of the World's Largest Cranes

THE *Alliance* MACHINE COMPANY

Main Office: Alliance, Ohio — *Founded 1901*

LADLE CRANES • GANTRY CRANES • FORGING MANIPULATORS • SOAKING PIT CRANES • STRIPPER CRANES • SLAB AND BILLET CHARGING MACHINES • OPEN HEARTH CHARGING MACHINES • SPECIAL MILL MACHINERY • STRUCTURAL FABRICATION • COKE PUSHERS

Give Us The Runway And We'll Lift The World

NEW PRODUCTS and equipment

Reply card on page 115 will bring you free literature, editorial clips or more information on new poducts and equipment described or advertised in this issue

Coating

. . . bolt, nut, rod drawing

This coating eliminates the need for lime and powder in the drawing box. Said to give 10 to 15 per cent longer die life, it acts as a rust preventive for several months.

Coating Compound No. 202 has been in use for two years. Chandler Chemical Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 1

Presses

. . . double action drive

This press has a 26-in. stroke and 60-in. shut height on the inner slide. Over-all height is only 21 ft. Compactness has been achieved by placing the drive on

the back of the crown and bringing the blankholder linkage down into the uprights.

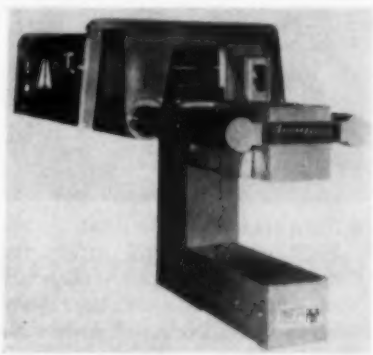
Adjustments for the blankholder have likewise been kept inside the body of the press. Linkage bearing surfaces and blankholder gibs are constantly flushed with filtered oil from the automatic circulating lubrication system. An eddy current clutch provides electrical acceleration of the slide motion for faster stroking rates without exceeding safe drawing speeds. Danly Machine Specialties Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 2

Control Systems

. . . automatic

The AccuRay process-control system for controlling thickness of cold-rolled strip consists of a welded steel radiation gage to signal sheet variations, a continu-



ous recorder to present thickness readings, an automatic controller to interpret signals and provide corrections, safety devices and an operator's control station.

Fabricated of ½-in. steel plates, the unit retracts completely into the mill frame to permit easy access to mill rolls. Industrial Nucleonics Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 3

Single Package Cleaner

. . . for industrial rags

Composition No. 75 eliminates the supplementary fillers or clay-type ingredients used to assist regular cleaning compounds in removing oil, grease and soils from rags. No additives are required.

It is a light tan, free flowing powder said to offer excellent rinsability in hot water. Oakite Products Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 4

Direct Reader

. . . improved construction

It's designed for improved analysis over a wider range of materials under diverse conditions—sample concentration, range, excitation, elements and matrices. It is recommended for familiar problems where basic changes in production are not anticipated.

Advantages claimed: Increased stability through a new optical mount; simplified and accelerated operation and service through redesign of sample compartment and electronic components. Baird Associates Inc.

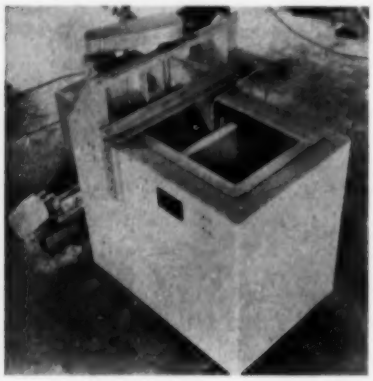
FOR MORE DATA CIRCLE REPLY CARD NO. 5

Quenching Unit

. . . gas fired

Unit is designed to operate in the range between 300 and 800° F., depending on the selection of salt or oil. The temperature of the hot salt or oil is held by a

control arrangement. Agitation is provided by a propeller immersed in one section of the salt or oil



pot. Duct work is constructed within the container in the quenching area so that the closest approach to uniform but controllable velocity of the flow of the quenching medium is reached.

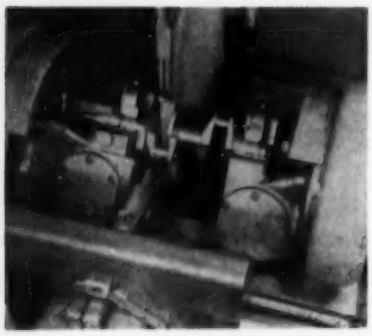
The unit may be equipped with a filter for removal of any high temperature salt carry-over. Industrial Heating Equipment Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 6

Precision Grinder

. . . for small crankshafts

For finishing the pins of small crankshafts, the machine is known as the 10 in. Type H Crank Pin



Grinder. It is available in two lengths between centers for either 16 or 34 in. crank lengths. Both hand and hydraulic feed are provided for the grinding wheel head, which carries a 36-in. diameter wheel.

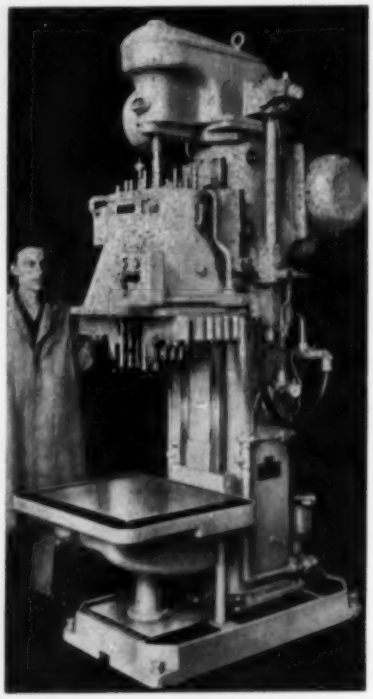
All controls are centrally located. Microsphere bearings are used for the grinding wheel spindle. The one-piece bed casting includes reservoirs for hydraulic oil and coolant. Pockets, for ease of leveling, are cast into the bed around the base. Landis Tool Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 7

Drilling, Tapping Machine

. . . for medium-sized work

This is a push-button controlled multi-drilling and tapping machine. It is available with a single spindle head, an adjustable spindle head or



a fixed center spindle head.

Push-button control offers the following feed cycles: Standard cycle; jump feed cycle; time delay reverse cycle. National Automatic Tool Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 8

Surface Treatment

. . . for aluminum

Proseal #16 (a Promat Division product) is a chromate conversion protective coating for aluminum and aluminum alloys. Said to inhibit corrosive action between paint and aluminum, the films meet requirements of MIL-C-5541. It is designed for use on any application where extruded, forged, wrought or cast aluminum and its alloys are used.

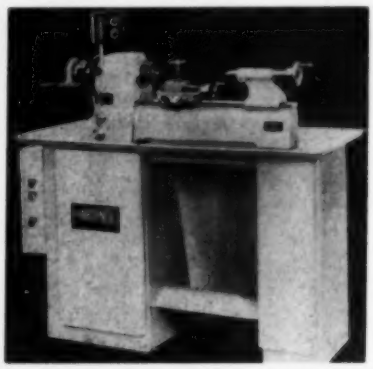
Other advantages reported: Greater control over uniformity of film; low material cost; suitability for production coating of any aluminum component; provides high protection from corrosion, when used alone or as a base for paint. Poor & Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 9

Speed Lathe

. . . push-button variable

Instantly variable spindle speeds from 230 to 3500 rpm are achieved by a control on the Hardinge DV59 high speed lathe. The lathe is



power operated from a control box over the headstock. You can change spindle speed by pressing either faster or slower buttons until desired rate is reached.

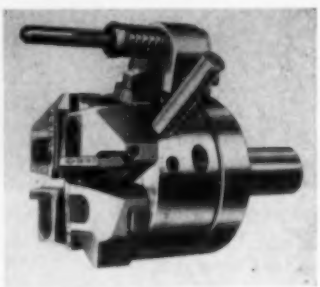
Another new feature is a ball bearing, lever operated collet closer for fast, easy collet opening and closing with a full range of adjustable collet tension. Hardinge Bros. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 10

Chaser Die Head

. . . for screw machines

The ½-in. EXX Landamatic head is for application to No. O, OG, 2 and 2G B&S automatic screw



machines. Compactly designed, the head features long life tangential chasers and a range coverage for No. 4 to ½ in. inclusive.

It is designed with a floating shank with adjustable spring tension. The die head is always able

Tube Selection Cannot be Reduced to a Formula

—even a complicated one

Selection of the proper grade of stainless steel for a particular application is a relatively complex problem and involves manufacturing, metallurgical, chemical and economic considerations. Although it is complex it has been made easier by industrial research. Data accumulated through years of research and experience gained in helping to solve varied application problems are now available to guide the user in the solution of his present problems.

It is practically impossible to list all the media in which stainless steels will resist corrosion. It is even more difficult to enumerate all the conditions under which the stainless steels will resist effectively the corrosive effects of such media. Frequently, a relatively minor contaminant, when combined with the main reagent, will cause a more detrimental corrosive action than the latter by itself. This is particularly true of iron salts which, in the presence of chlorides, often prove to be a very potent corrodent, producing pitting.

It is always advisable to test a sample under actual operating conditions, especially before extensive untried installations are made. Proper tube selection starts with expert opinion, available to you through Mr. Tubes, your nearby B&W Tube Representative. There is no substitute for the kind of experience with pressure tubing problems you'll find at B&W. Ask Mr. Tubes for help in matching tubes to jobs.

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

B&W SEAMLESS and WELDED TUBES

TA-4061(P)

to start threading with the amount of pressure suitable for the thread pitch being produced. The die head is of the external trip type and is made of an alloy steel. Landis Machine Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 11

Tote Boxes

. . . with plastic covers

Clear, rigid sheet tops permit easy handling, inspection and inventory of small industrial parts. The cover fits tightly over the box edges and is clamped to the side, making them spill and dust proof.

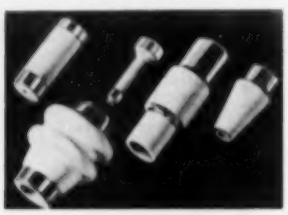
Insert trays (standard or custom design) divide the box into sections to hold different parts as illustrated. The 8 x 12, 12 x 16 and 12 x 18 and 15 x 24-in. boxes are from 2 to 5 in. deep. The cover is curved to permit contents to protrude. Bakelite Co., division of Union Carbide & Carbon Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 12

Metallic Coating

. . . for industrial ceramics

This single coating material has been applied to refractory ceramic bodies, (glazed or bisque) to which hard and soft solders may be ap-



plied to form vacuum-tight joints with metal parts or other nonmetallic refractories.

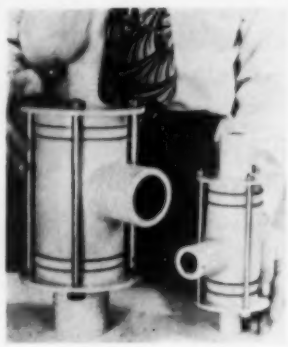
The process eliminates the need for intermediate and expensive plating treatments. Hard solders that melt in the range of 1000 to 1600° F and soft solders melting at temperatures from 245 to 450° F may be applied directly to the metal coating. Frenchtown Porcelain Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 13

Jet Siphons

. . . acid proof

Illustrated are two sizes of the siphons used for emptying waste acid from tanks and sumps. Plastic is fiberglass-reinforced Furacam,



which is not attacked by acid or alkaline solutions (except strong chromic or nitric acid). Nozzles are sized for standard acid hose. Unit is easily disassembled for cleaning.

Operation is possible with steam from 10 to 50 psi. Carl Buck & Associates.

FOR MORE DATA CIRCLE REPLY CARD NO. 14

Sisal Buffs

. . . with improvements

Four major improvements on the Binderized Bias Sisalweev sections are: Treatment with an impregnating material, new center construction, improved sewing, use of stronger sisal cloth.

Sections $\frac{3}{8}$ in. thick with either 5 or 7 in. centers, untreated or treated with the Binderizing process, are available in a full range of sizes. Spiral sewing can be applied with spacing as desired. Hanson-Van Winkle-Munning Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 15

Space Heaters

. . . portable, automatic

Three spacers have been added to the line. They have built-in thermostatic controls to maintain room temperatures at the comfort level and are heat-powered with fully insulated, metal-sheathed tubular elements.

One of the heaters is a small 115-volt model with a capacity of 1500 watts; the larger models are 230/240 volt heaters rated at 2400

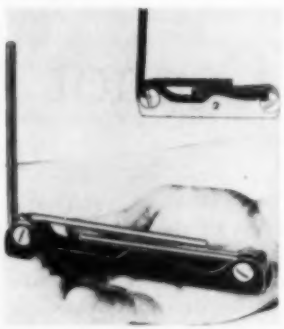
and 4800 watts. All have attractive, durable finishes and modern styling. Edwin L. Wiegand Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 16

Wrench

. . . pocketknife-type

This wrench has been made to accommodate five sizes of Allen head fittings. P5L has keys rang-



ing from 3 to 5 in. in length and sizes $\frac{3}{32}$, $\frac{1}{8}$, $\frac{5}{32}$, $\frac{3}{16}$ and $\frac{7}{32}$ in.

The illustration compares the smaller, commonly known P5 and the P5L Smitty. Hunter Tool Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 17

AC Welders

. . . low-maintenance

The NEMA rated 300, 400 and 500 ampere Air Reduction Sales Co. models feature stepless current control, silicone insulation, aluminum coil windings. They are equipped with a large current scale. Fingertip current adjustment and quieter operation are

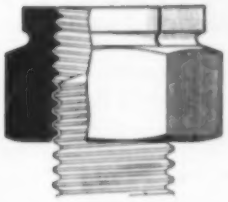
This portable electric hammer is completely self-contained. So are the one-piece, all-metal FLEXLOCs that hold it together, even under the intense impact vibration induced by the rapid hammering action.

FLEXLOCs chosen to withstand vibration of 3000 hammer blows per minute

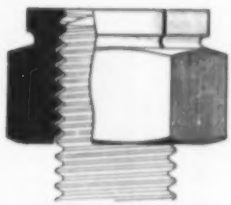
The manufacturer of this portable electric hammer reports, "FLEXLOC Self-Locking Nuts have solved our problem of obtaining a desirable fastener, because they withstand the terrific vibration induced by the impact of 3000 hammer blows per minute without working loose."

This portable electric hammer is subjected to terrific impact-induced vibration. The fasteners that hold it together must take the same beating. The FLEXLOCs were selected only after numerous fastening devices had been tested. Two ¼"-20 nuts hold the fastening bolts securely in position on the forward end of the hammer. One 1"-14 nut prevents loosening of the components at the nose.

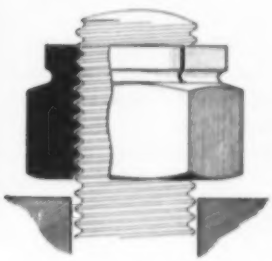
You can get FLEXLOCs of various types and materials in a wide range of sizes and in any quantity. And these one-piece, all-metal locknuts are carried in stock by leading industrial distributors everywhere. See your FLEXLOC distributor or send for literature and samples. STANDARD PRESSED STEEL CO., Jenkintown 33, Penna.



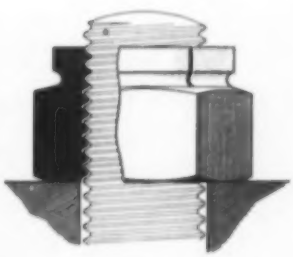
Starting. A FLEXLOC starts like any ordinary nut. Put it on with your fingers. Tighten it with a standard hand or speed wrench.



Beginning to Lock. As the bolt enters the segmented locking section, the section is expanded, and the nut starts to lock.



Fully Locked As a Stop Nut. When 1½ threads of a standard bolt are past the top of the nut, the FLEXLOC is fully locked. A FLEXLOC does not have to seat to lock.



Fully Locked As a Seated Nut. When it is used as a lock or stop nut, the locking threads of the FLEXLOC press inward against the bolt, lifting the nut upward and causing the remaining threads to bear against the lower surface of the bolt threads. Vibration will not loosen a FLEXLOC, yet there is no galling of threads.

FLEXLOC® LOCKNUT DIVISION

SPS
JENKINTOWN PENNSYLVANIA

made possible by coil supports floating in a special rubber bushing.

Wide current ranges enable them to be used on practically all industrial applications ranging

from light-duty, low current, to heavy-duty, high current welding jobs. They are especially suited for heavy secton welding where high current is desirable and when arc blow would otherwise cut welding speed and quality. Air Reduction Sales Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 18

Gear Speeders

. . . on automatic cycle

These Model GSC, 10 in. OD capacity machines include air cylin-

der clamping and braking controls and a pushbutton controlled automatic operating cycle. The gear to be checked is run in contact with a mating production gear or master gear.

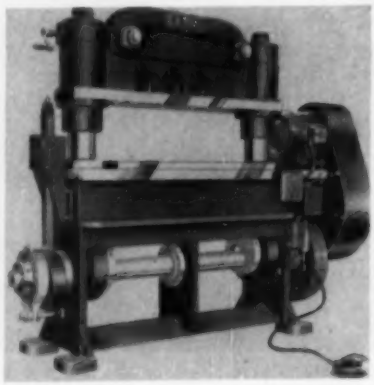
The speeder is to be used for sound testing production spur and helical gears in semi and mass production operations. The model illustrated is designed for the sound testing of 1⅝-in. diameter helical gears. It is powered by a 1 hp motor and measures about 64 x 50 x 40 in. National Broach & Machine Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 19

Punch Press

. . . 16 x 36 in. bed area

This Multi-Max press is designed for multiple and maximum stamping production and drawing up to 6 in. stroke. It is also used



for conventional press brake work and power shearing, for cutting strips or irregular shapes in felt or fiber material with steel rule dies.

Ram area is 10 x 36 in.; shut die height, 10 in., with 24 in. maximum height to order; speed, 70 strokes a minute. The ram adjustment is 2 in. The presses are driven by a 5 hp motor and are of straight side twin column design, underneath double crank drive, back geared with herringbone heat treated alloy steel gears. Diamond Machine Tool Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 20

Carburizing Compound

. . . nonscaling, selective

The compound prevents formation of scale or soft skin in the hardening, annealing, normalizing or forging of steel, regardless of the furnace atmosphere. As a selective carburizing agent, Steelaide prevents the coated portion of the metal from absorbing carbon so that it retains its original analysis.

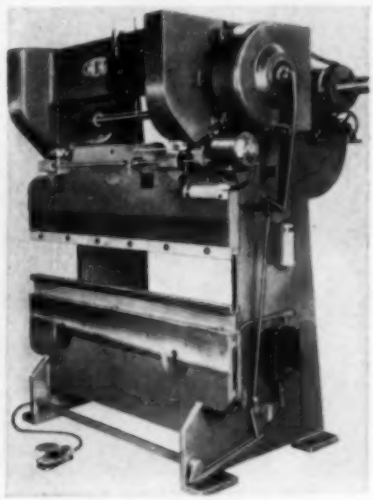
The compound is applied by dipping or brushing. It is available in 1 and 5 lb fibre containers and in 25 lb cans. Pannier Corp.

FOR MORE DATA CIRCLE REPLY CARD NO. 21

Electric Control

. . . for press brakes

The unit consists of a foot switch that replaces the standard foot lever, solenoid for operating the clutch, automatic switch box and a control panel.



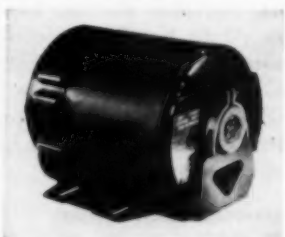
The control is said to increase production on all types of press brake work, eliminate whipping and work spoilage and provide greater safety for the operator. By use of the two foot switches, the brake can be operated by two men working together. Photo shows foot switch, clutch operating solenoid and automatic switch box. Dreis & Krump Mfg. Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 22

Motor

. . . totally enclosed

This split-phase motor drives light machine tools and materials



handling systems. It has a large, built-in terminal board and easily

eliminate the guesswork in selecting tool steels

⅓ actual size, Selector is in 3 colors

Thousands of metal working people are using the Crucible Tool Steel Selector to determine exactly which type of steel they need. This handy selector covers 22 tool steels which fit 98% of all tool steel applications.

The selector is unique because it starts with the ultimate use of the steel. It breaks down all tool steel applications into six major classifications, under which the different grades of steel available for certain specific requirements are indicated in legible cutouts. Heat treatment and machinability data are also included for each grade.

A flip of the dial will give you the answer, and almost just as quickly you can get the steel you select. For each type of steel shown on the selector is in stock in Crucible warehouses, conveniently located throughout the country.

To get your Selector merely fill in the coupon and mail. There is no obligation whatsoever.

HERE'S AN EXAMPLE:

Application — Deep drawing die for steel

Major Class — Metal Forming — Cold

Sub-Group — Special Purpose

Tool Characteristics — Wear Resistance

Tool Steel — Airdi 150

A turn of the dial does it! And you're sure you're right

Crucible Steel Company of America
Dept. S, Oliver Building
Pittsburgh 22, Pa.

Name_____

Company_____ Title_____

Address_____ City_____ State_____

CRUCIBLE first name in special purpose steels

54 years of Fine steelmaking

TOOL STEELS

CRUCIBLE STEEL COMPANY OF AMERICA · TOOL STEEL SALES · SYRACUSE, N. Y.

for a fabulous finish...

Jewel Brand
ABRASIVE BELTS

For grinding, smoothing, polishing — metal, wood, leather, plastics, rubber. A grit for every purpose— prompt service on every purchase.

ABRASIVE PRODUCTS, INC.
5111 Pearl Street
South Braintree 85, Massachusetts

NEW PRODUCTS and equipment

accessible base slots for simplified installation.

In NEMA 48- and 56-frames, the motor is available in ratings of 1/6, 1140 rpm to 1/3 hp, 3450 rpm, 60 cycle. General Electric Co.

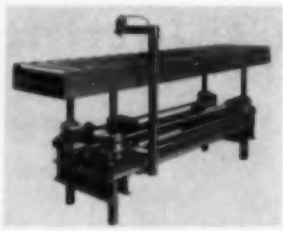
FOR MORE DATA CIRCLE REPLY CARD NO. 23

Elevator Device

. . . for long sheets of steel

The Portelvator handles long sheets of steel being fed into a shear. Push button start and stop control and a gear driven limit switch give the operator ease of control and operation.

The device is made in many



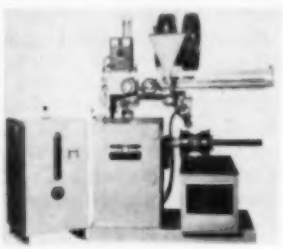
sizes with operating features from completely manual to 100 per cent automatic, stationary or portable. Hamilton Tool Co.

FOR MORE DATA CIRCLE REPLY CARD NO. 24

Rebuilding Machine

. . . for new, worn parts

The K-2M takes cylindrical pieces up to 40 in. in diameter. They may be locked onto the rotating shaft or the entire boom can be swung around to the side for rebuilding



on a stationary or rotating table. The work shaft is operated electrically and can be tilted a full 90 degrees. The boom is also motor controlled. A handwheel for fine vertical adjustment is provided.

Spindle speeds from ¼ rpm to 3 rpm are obtained by turning a dial. The flux hopper is self-contained and travels with the welding head. Mir-O-Col Alloy Co. Inc.

FOR MORE DATA CIRCLE REPLY CARD NO. 25

FREE LITERATURE

Catalogs and Clip Sheets

Use these reply cards to bring you free literature, editorial clips or more information on new products and equipment described or advertised in this issue.

Leaded Alloy Steel

Joseph T. Ryerson & Son Inc. describes Rycut 40, said to be the fastest machining alloy steel in its carbon range. Case studies are included—Bulletin 14-5.

FOR A FREE COPY CIRCLE REPLY CARD NO. 26

Forging

Globe Forge Inc. offers "Manual of Forging Design," covering the design of drop, upset and press forgings.

FOR A FREE COPY CIRCLE REPLY CARD NO. 27

Planer Conversion

Simmons Machine Tool Corp. shows how a heavy-duty planer was converted to a modern skin mill to produce "skins" for jet planes—12 pages.

FOR A FREE COPY CIRCLE REPLY CARD NO. 28

General Catalog

Fischer & Porter Co.'s complete line of process instrumentation is covered—Catalog 1, 11 pages.

FOR A FREE COPY CIRCLE REPLY CARD NO. 29

Fasteners

Standard Pressed Steel Co. pictures and details its line of Unbrako precision threaded fasteners—32 pages.

FOR A FREE COPY CIRCLE REPLY CARD NO 30

Plant Maintenance

Johns-Manville's "Good Operating Practices" contains 101 suggestions for maintaining plant buildings and equipment — 11 pages.

FOR A FREE COPY CIRCLE REPLY CARD NO. 31

Cleaning Equipment

American Wheelabrator & Equipment Co.'s *Wheelabrator Tips* has been developed to help those using airless blast cleaning equipment—Vol. 1, No. 1.

FOR A FREE COPY CIRCLE REPLY CARD NO. 32

Centrifugal Pumps

Industrial Filter & Pump Mfg. Co. covers its line of vulcanized rubber-lined centrifugal pumps and stainless and cast steel centrifugal pumps—8 pages.

FOR A FREE COPY CIRCLE REPLY CARD NO. 33

Hot Metal Cars

M. H. Treadwell Co. Inc. offers economies and improvements obtainable with its mixer-type hot metal cars—Bulletin No. 60, 11 pages.

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Combustion Efficiency

Arnold O. Beckman has developed a sampling system for continuous trouble-free sampling and oxygen measurement of combustion processes—Bulletin No. 703.

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Worm Gear Jack

Duff-Norton Mfg. Co. offers a manual featuring a worm gear jack. They say it speeds up the raising and lowering of movable parts in metalworking machinery —Catalog AD-34, 8 pages.

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Cutting Tools

Midwest Ohio Tool Co. covers its line of precision cutting tools in illustration. Prices are available to customers only.

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Welding Stainless

Babcock & Wilcox Co.'s folder outlines the welding characteristics of austenitic and ferritic grades of stainless steel and discusses the question of proper joint design—Folder TDC 162, 4 pages.

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Laboratory Ovens

Modern Laboratory Equipment Co. describes the ModernLab line of gravity and mechanical convec-

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tion laboratory ovens and sterilizers—Catalog No. A, 12 pages.

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Metal Finishing

Jelco Finishing Equipment Corp. lists its finishing, plating equipment and specialties for easy reference.

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Milling Machine

Producto Machine Co. describes its new special-purpose automatic production milling machine — 7 pages.

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Cast Irons

International Nickel Co. Inc. shows how to increase the usefulness of cast irons and improve the properties by alloying and heat treatment — Bulletin A-115, 16 pages.

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Eddy-Current Equipment

Eaton Mfg. Co.'s Dynamatic Division offers information on the principle and use of Eddy-Current adjustable speed equipment—Bulletin GB-2, 16 pages.

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Grinding Safety

Besly-Welles Corp. offers "Safety Hints in Grinding," which shows in cartoon-style the wrong and right ways to test, mount and use grinding wheels and discs.

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Hook Assembly

Nutting Truck & Caster Co. describes the Shock Absorbing Assembly for overhead conveyor-truck systems. Fifteen models of Tow-Line Trucks are illustrated—Bulletin No. 54-TL, 8 pages.

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Self-Molding Packing, Sealing

Surveys Inc.'s "Did You Ever Meet Your Silent Partner" dramatizes losses sustained through leaks and shows how they may be eliminated—8 pages.

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Manganese Steel Chain

Taylor-Wharton Iron & Steel Co. describes types of steel chain for conveyors, elevators, drives, etc.—7 pages.

FOR A FREE COPY CIRCLE REPLY CARD NO. 47

Furnace, Oven Controls

Minneapolis-Honeywell Regulator Co. describes Brown Instruments and Honeywell Controls for industrial furnace and oven equipment—Catalog and Price List 54-1, 44 pages.

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Hydraulic Drives

Oliver Iron and Steel Corp.'s Berry Division details hydraulic drives for sawmill carriages—Bulletin SM-1, 8 pages.

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EDITORIAL REPRINTS

A Look at the Record

STEEL's quarterly survey on inventory conditions among users of steel, copper and aluminum (p. 43) can help you better plan your business course and more accurately chart buying policies.

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Sky-High Construction

Building is booming and will continue to do so next year. To learn about one of the major supports of our economy, see p. 39.

FOR A FREE COPY CIRCLE REPLY CARD NO. 51

Plating

At Standard Pressed Steel Co. nine plating lines handle almost every type of plating and surface treatment as a routine matter. On p. 82 you'll find a description of the lines and what they do.

FOR A FREE COPY CIRCLE REPLY CARD NO. 52

Arc Welding

Westinghouse's new coated electrode, with sufficient arc stabilizing qualities to make straight polarity operations possible, successfully refines an old process. On p. 84, the process and its advantages are covered.

FOR A FREE COPY CIRCLE REPLY CARD NO. 53

Quality Control

A decrease in the number of pieces scrapped and reoperations at Warner Gear resulted from the introduction of quality control, p. 86. Psychology played a big part. Everyone, from the president to the operator, was briefed on each move as it came up.

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STEEL

November 1, 1954

Market Outlook

STEEL INGOT output is the highest since last January. It's up to 75 per cent of capacity, only six-tenths of a point below the year's high mark in the last week of January.

Optimism is in order. Here's why: Steel inventory reduction is practically completed. The automobile industry, largest consumer of steel, is resuming output after model change-over. Construction, second largest user of steel, shows every evidence of remaining at a high level. Nonfarm housing starts are rising, in defiance of the season. New emphasis is being placed on selling, even to the extent a steel company is pushing its customers' products—appliances. The farm equipment industry is expected to see a business improvement.

BACKED BY DOLLARS—Demonstrating confidence that the future will be good, Jones & Laughlin Steel Corp. will spend $50 million in 1955 to improve and expand its plant and equipment in the Pittsburgh district. That sum is nearly double this year's $29 million expenditure.

Confirmation that reduction of steel inventories is about over is found in STEEL's latest quarterly survey (p. 43). Sixty-five per cent of the respondents plan to hold inventories at present levels. This means they will have to buy at least for current consumption levels, which are pretty good. Three months ago, almost half the users said they planned further cutbacks.

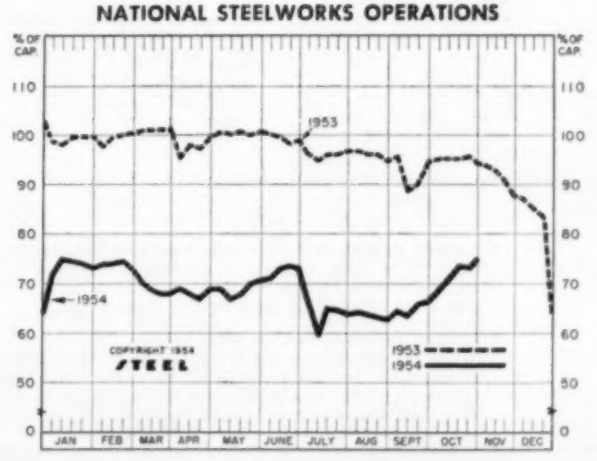
IMPACT—Return of the automobile industry to the marketplace for steel can be detected in the forms of steel that are in growing demand. Notable in this category is cold-rolled carbon sheet. Within a week, for instance, one mill extended delivery dates on this product by 3 weeks. Now, it needs 7 to 8 weeks, instead of 4 to 5, to make delivery.

BUILDING BUSINESS—The reason the construction industry is being counted on for strong support is that it is expected in 1955 to continue its $36.5 billion pace, which is setting a new record this year (p. 39). One segment of construction — nonfarm houses — saw 114,000 starts in September, contrary to usual seasonal trends. This number exceeded August starts by 3 per cent and those of September, 1953, by 20 per cent.

REASON FOR HOPE—Strength in homebuilding is reason for encouragement in the home appliance industry. Historically, appliance production rises with homebuilding. This market growth is not going to be relied upon entirely for appliance demand, though. A nationwide sales campaign—not by the appliance makers but by one of their steel suppliers—is being conducted to give appliance sales a boost. Calling the campaign "Operation Snowflake," U. S. Steel Corp. is using the slogan, "Make It a White Christmas—Give Her a Major Appliance." With a snowflake as its symbol, the program is designed to bring a blizzard of orders for appliances—and steel to make them with.

ENCOURAGED—In the farm field, Alva W. Phelps, chairman, Oliver Corp., and president of Farm Equipment Institute, thinks the agricultural equipment industry has ended its decline. Next year will be as good as 1954, and perhaps a little better, he believes. Dealers' inventories have declined considerably, he says.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended Oct. 31	Change	Same Week 1953	Same Week 1952
Pittsburgh	72.5	+ 1*	98	106.5
Chicago	78.5	— 1*	99	112.5
Mid-Atlantic	69	+ 4	95	99
Youngstown	72.5	— 1.5	100	106
Wheeling	80	— 2	95.5	98
Cleveland	87.5	+ 5.5	103	110
Buffalo	87.5	+12	106.5	106
Birmingham	71	— 3	96.5	107
New England	50	+ 1	82	85
Cincinnati	69.5	— 0.5	68	90
St. Louis	84	+14.5	96	98.5
Detroit	80	— 2	97.5	108
Western	81	+21	101	108
National Rate	75	+ 2	94	106.5

INGOT PRODUCTION‡

	Week Ended Oct. 31	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	110.3†	110.1	104.5	132.7
NET TONS (In thousands)	1,772†	1,769	1,678	2,132

*Change from preceding week's revised rate. †Estimated. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,384,549 in 1954; 2,254,459 in 1953; 2,077,040 in 1952.

Metalworking Outlook—p. 31 Technical Outlook—p. 81

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Oct. 26 1954	Oct. 19 1954	Month Ago	Oct. Average
(1947-1949=100)	144.7	144.7	144.6	144.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Oct. 26

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.525
Rails, light, 40 lb	5.917
Tie Plates	5.275
Axles, railway	7.500
Wheels, freight car, 33 in. (per wheel)	48.500
Plates, carbon	4.675
Structural Shapes	4.517
Bars, tool steel, carbon (lb)	0.430
Bars, tool steel, alloy, oil hardening die (lb)	0.525
Bars, tool steel, H.R., alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.115
Bars, tool steel, H.R., alloy, high speed W 18, Cr 4, V 1 (lb)	1.610
Bars, H.R., alloy	8.775
Bars, H.R., stainless, 303 (lb)	0.418
Bars, H.R., carbon	5.000
Bars, reinforcing	5.050
Bars, C.F., carbon	8.160
Bars, C.F., alloy	11.275
Bars, C.F., stainless, 302 (lb)	0.433
Sheets, H.R., carbon	4.880
Sheets, C.R., carbon	5.871
Sheets, galvanized	7.220
Sheets, C.R., stainless, 302 (lb)	0.548
Sheets, electrical	$9.350
Strip, C.R., carbon	7.507
Strip, C.R., stainless, 430 (lb)	0.415
Strip, H.R., carbon	5.125
Pipe, black, buttweld (100 ft)	15.000
Pipe, galv., buttweld (100 ft)	18.605
Pipe, line (100 ft)	146.804
Casing, oil well, carbon (100 ft)	154.216
Casing, oil well, alloy (100 ft)	227.875
Tubes, boiler (100 ft)	‡
Tubing, mechanical, carbon	‡
Tubing, mechanical, stainless, 304 (100 ft)	161.193
Tin plate, hot-dipped, 1.25 lb	6.533
Tin plate, electrolytic, 0.25 lb	7.233
Black plate, can making quality	6.333
Wire, drawn, carbon	7.938
Wire, drawn, stainless, 430 (lb)	0.545
Bale ties (bundle)	5.860
Nails, wire, 8d common	7.815
Wire, barbed (80-rod spool)	7.100
Woven wire fence (20-rod roll)	16.815

‡Not available.

STEEL's FINISHED STEEL PRICE INDEX*

	Oct. 27 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	194.53	194.53	194.19	189.38	152.52
Index in cents per lb.	5.270	5.270	5.261	5.130	4.132

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$117.95	$117.95	$117.77	$115.18	$91.64
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	56.54	46.10
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.60
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	32.67	32.33	30.50	33.83	26.67

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Oct. 27 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.35
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.35
Bars, H.R., deld. Philadelphia	4.55	4.55	4.55	5.302	3.83
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	3.95-4.00
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.25
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.25
Shapes, deld., Philadelphia	4.53	4.53	4.53	4.38	3.50
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.40
Plates, Chicago	4.225	4.225	4.225	4.10	3.40
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.35	3.50
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.40
Plates, Claymont, Del.	4.225	4.225	4.225	4.55	3.50
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.25
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.00
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.00
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.20
Sheets, Galv., Pittsburgh	5.45	5.45	5.45	5.275	4.40
Strip, H.R., Pitts.	4.05	4.05	4.05	4.025	3.25
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3.25
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45-5.95	4.00
Strip, C.R., Chicago	6.00	6.00	6.00	5.70	4.00-4.15
Strip, C.R., Detroit	5.60-.90	5.60-.90	5.60-.90	5.45-6.05	4.20-.25
Wire, Basic, Pitts.	5.75	5.75	5.75	5.475-5.525	4.15
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.35-6.55	5.15
Tin plate (1.50 lb), box, Pitts.	$9.05	$9.05	$8.95	$8.95	$7.75
SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$78.00	$78.00	$78.00	$75.50	$61.00
Wire rods, ⅜-⅝" Pitts.	4.675	4.675	4.675	4.525	3.40
PIG IRON, Gross Ton					
Bessemer, Pitts.	$57.00	$57.00	$57.00	$57.00	$47.00
Basic, Valley	56.00	56.00	56.00	56.00	46.00
Basic, deld. Phila.	59.66	59.66	49.66	60.75	49.44
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.50
No. 2 Fdry, deld. Phila.	50.16	50.16	50.16	61.25	49.94
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	39.38
No. 2 Fdry (Birm.) deld. Cin.	60.58	60.58	60.43	60.43	46.08
Malleable, Valley	56.50	56.50	56.50	56.50	46.50
Malleable, Chicago	56.50	56.50	56.50	56.50	46.50
Ferromanganese, Duquesne	190.00†	190.00†	190.00†	200.00†	175.00*

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$32.50	$32.50	$30.50	$36.50	$29.00
No. 1 Heavy Melt, E. Pa.	32.50	31.50	29.00	31.50	23.50
No. 1 Heavy Melt, Chicago	33.00	33.00	32.00	33.50	27.50
No. 1 Heavy Melt, Valley	35.50	35.50	32.50	35.50	29.25
No. 1 Heavy Melt, Cleve.	32.50	32.50	30.50	32.50	26.00
No. 1 Heavy Melt, Buffalo	30.50	30.50	28.50	34.50	27.25
Rails, Rerolling, Chicago	54.50	56.00	51.50	43.50	41.50
No. 1 Cast, Chicago	39.50	39.50	38.50	32.50	41.50
COKE, Net Ton					
Beehive, Furn, Connlsvl.	$13.75	$13.75	$14.75	$14.75	$13.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	16.75	15.75
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	20.00

Daily Nonferrous Price Record

	Price Oct. 27	Last Change	Previous Price	Sept. Avg.	Aug. Avg.	Oct. 1953 Avg.
Copper	30.00	Apr. 12	29.75-30.00	30.000	30.000	29.606
Lead	14.80	Oct. 4	14.55	14.400	13.846	13.300
Zinc	11.50	Sept. 3	11.00	11.900	11.000	10.000
Tin	92.50	Oct. 27	92.625	93.545	93.332	81.096
Nickel	60.00	Jan. 14, 1953	56.50	60.000	60.000	60.000
Aluminum	22.20	Aug. 5, 1954	21.50	22.200	22.119	21.500
Magnesium	27.00	Mar. 9, 1953	24.50	27.000	27.000	27.000

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, commond grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99+ %, deld.; Magnesium 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.**
  Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.**
  Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.**
  Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- **A source of information on market trends.**
  Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- **Reports on iron and steel production, and materials and product shipments.**

Enthonics AT WORK Protecting Zinc, Cadmium, Copper, Brass, Steel

ENTHONE CORROSION PREVENTIVES

Stand up to Salt Spray

At Enthone our sole aims are the development of better methods for the improvement of metal finishing and the reduction of finishing costs. These we have accomplished in the field of corrosion prevention. Our research chemists and engineers are responsible for the following outstanding metal finishing products for the prevention of costly corrosion:—

ENTHOX: Puts iridescent, gold-colored chromate coating on zinc and cadmium. An excellent base for organic finishes. Highly resistant to corrosion; withstands salt spray from 100 to over 1000 hours.

COMPOUND 39: A one-operation phosphating and cleaning compound for steel and zinc. Fine grained, highly adherent phosphate coat is ideal base for organic finishes. Gives high bond strength.

EBONOL "C": Gives jet black cupric oxide coating to copper and its alloys. Chemically stable; heat stable; very adherent. Fine base for organic finishes. Readily withstands salt spray.

COMPOUND NR-31: A rustproofing agent for iron and steel. Leaves thin surface film that prevents rusting when drying water off metal or when storing parts in water. Quickly removed by rinsing in water.

COMPOUND NR-37: An organic rust-inhibitive compound that prevents rusting while evaporating water from steel or iron following hot or cold rinsing. The compound evaporates as the water evaporates, leaving the surface ready for organic coating.

COMPOUND NR-40: A neutral degreasing and rustproofing compound for iron and steel. Imparts light, corrosive-resistant film. Cleans, temporarily rustproofs in one operation. Excellent for hot water drying of steel.

RUSTPROOFING OIL NO. 15: A polar solvent-type rustproofing oil that leaves thin film on metal. Safety solvent with flash point well over 100°F. Completely sheds water. Has a salt spray resistance of 15 to 24 hours.

RUSTPROOFING SOLUBLE OIL: An emulsifiable, rustproofing material. Corrosion-resisting oil film is created by diluting oil with water. Protects steel against rust for 10 to 15 hours in salt spray.

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Nonferrous Metals

Electrolytic process for chrome plating aluminum gives promise of cutting cost by one-third. Nickel or copper undercoat not needed

Nonferrous Metal Prices, Pages 122 & 123

CHROME-PLATED ALUMINUM requiring no nickel or copper undercoat is being readied for market.

An electrolytic process announced last week promises to cut the cost of chrome-plated aluminum products one-third. Initial targets are the automotive, appliance and home furnishing fields.

Big Plans — Chemical Research Corp., a Canadian company with mining and construction interests, holds a 65 per cent interest in development of the process in the U. S. and 50 per cent of the world rights. Patents have been applied for in 26 countries.

The firm plans to build a plant to produce decorative aluminum strip in western Pennsylvania near the fabricator market. A large automotive supplier is reported to have licensed the process for the Detroit market.

Plus Values—Aiming at many decorative and a few functional parts on autos, the coated aluminum parts could give zinc die castings a lot of competition. Cutting surface friction—on auto pistons and aircraft wings for example—is a plus factor in combining the lightness of aluminum and the hard, smooth coating of chrome. As 180-degree bends can be made without flaking the coating, stamping after plating is possible.

Steadiness Ahead

Coasting into November with few disturbances, nonferrous markets promise to remain close to "normal" to the end of the year. Copper price inflation is disappearing and production is once more at capacity. Scrap values, once enhanced by the pinch in refined metal, are drifting downward. Ingot sales are slower than slow and price trimming is back.

Lead and zinc buying in October proved disappointing and November looks like more of the same. A bright spot is the possibility of heavy buying by battery makers. Replacement battery shipments jumped 244,000 units in September to a 2,725,000, high for the year. Nine month shipments are still nearly half a million units behind those of last year, though. Smelting charge on battery plates is rising as more plates move to secondary smelters.

Brass mill bookings in September reflect scare buying. Copper content of new business taken hit 123,757 tons, highest in a year and a half and nearly 20,000 tons over that of August. Limited copper deliveries caused inventories to shrink 17,825 tons.

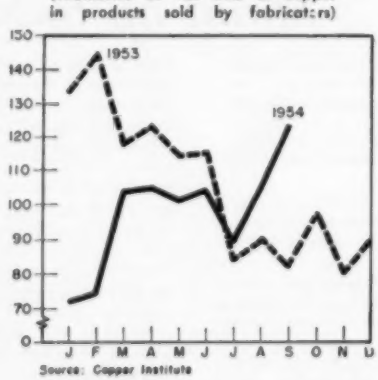
Titanium's Main Customer

Military contracts still set the pace of titanium mill product sales as slack continues in civilian orders. Producers can deliver reasonable quantities (up to about 2000 lb) in six to eight weeks. While this delivery is about the same as it was the first quarter, production and volume are at a higher level. Fluctuations in order books each month are caused by the letting of government contracts, which run in spurts. Expansion of melting capacity is a realistic possibility for the near future. It's a limiting factor in ingot production, though adequate now for normal schedules. Double-cycling of equipment has proved successful in raising output.

Copper Sales

A Change in Patterns

(Thousands of net tons of copper in products sold by fabricators)



Source: Copper Institute

Regaining Stability

After nine months of "serious price cutting," wire and cable are evidencing a better price condition. Eight weeks of restricted copper supply slowed deliveries. Sellers hope to get backlog caught up in three or four weeks and then replenish low inventories.

Fourth-quarter sales possibly will be the best of the year for industrial wire sales; first quarter is still high for the year, though third quarter showed gains from a poor second quarter. Wire and cable men see a good first half in 1955, with construction the big bulwark. Aluminum wire and cable are coming into their own. One sales official estimates 80 to 85 per cent of transmission and distribution cable and 50 to 55 per cent of secondary lines and drop cable will eventually be made of aluminum.

Cuba Promises More Nickel

More nickel from Cuba. That's the promise of a pilot plant to be built and operated at government expense (up to $6.25 million). It'll process 50 tons of ore a day from Moa bay. The plant will be built near New Orleans and will treat ore supplied without charge by Freeport Sulphur Co., operator of the plant. Freeport's ore deposits average 1.35 per cent nickel and 0.14 per cent cobalt. It is one of the biggest proved sources to be found outside Canada.

If the pilot operation proves successful, Nicaro Nickel Co., a Freeport subsidiary, will build a commercial plant capable of producing 30 million lb of nickel and 3 million lb of cobalt annually. Ore would be leached with sulphuric acid and an intermediate concentrate produced for extraction of the metals in the U. S.

Market Memos

- Reactivation of its rolled bar, rod and wire division makes five of the Aluminum Association's 12 groups currently active. Others are primary aluminum, sheet, foil and extrusions.

- Mercury, perched high on a $325 per flask summit, is beginning to find the footing none too firm, and faces a downhill slide soon.

- New director of BDSA's copper division is Ethan M. Pendleton, vice president, American Brass Co., who replaces David M. Snow, Bridgeport Brass Co., for a six-month term.

Here's good news for you

Precision

pins	rollers	shafts
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points	dowels	punches
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TORRINGTON SPECIAL METAL PARTS

Makers of Torrington Needle Bearings

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted

PRIMARY METALS AND ALLOYS

Aluminum: 99+%, ingots 22.20, pigs 20.50 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 24; No. 43, 5% Si, 23.8; No. 142, 4% Cu, 25.1; No. 195, 4.5% Cu, 0.8% Si, 24.5; No. 214, 3.6% Mg, 28.2; No. 356, 7% Si, 0.3% Mg, 23.9.

Antimony: R.M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.50-28.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.; Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb deld.

Cobalt: 97-99%, $2.60 per lb for 550 lb keg; $2.62 per lb for 100 lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 30.00 deld. Conn. Valley, 30.00 deld. Midwest; Lake 30.00 deld.; Fire refined 29.75 deld.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $145-$150 per troy oz.

Lead: Common 14.80, chemical 14.90, corroding 14.90, St. Louis; N. Y. basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8%, self-palletizing pig 27.00; notched ingot 27.75, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., and Madison, Ill., add 1.20 for pig and 1.25 for ingot. Sticks, 1.3 in. diameter, 46.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more f.o.b. Freeport, Tex., or Madison, Ill. Add 1.20 for Port Newark, N. J.

Mercury: Open market, spot, New York, $320-$325-$330, per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3.40 per lb; pressed ingot $4.08 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots for addition to cast iron, 60.00; prices f.o.b. Port Colborne, Ont., including import duty, New York basis, add 0.92.

Osmium: $140-$150 per troy oz nom.

Palladium: $21 per troy oz.

Platinum: $84-$87 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75-$80 per troy oz.

Selenium: 99.5%, $5-$6 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $30.00 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot 92.50, prompt 92.375.

Titanium: Sponge, 99.3+%, grade A-1 ductile (0.3% Fe max) $4.72; grade A-2 (0.5% Fe max) $4.46 per pound.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $4.95 per lb, f.o.b. shipping point; less than 1000 lb $5.10 99+% hydrogen reduced, $4.65. Treated ingots $6.70.

Zinc: Prime Western 11.50, brass special 11.75, intermediate 12.00, E. St. Louis, freight allowed over 0.50 per pound. High grade 12.85, special high grade 13.00, die casting alloy ingot 15.50, deld.

Zirconium: Sponge $10 per lb; powder electronics grade $15, flash grade $11.50.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloy 21.25-21.75; No. 12 foundry alloy (No. 2 grade) 20.25-20.75; 5% silicon alloy, 0.60 Cu max., 23.75-24.00; 13 alloy, 0.60 Cu max., 23.75-24.00; 195 alloy 21.75-22.75; 108 alloy 20.75-21.25; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 21.50-22.00; grade 2, 20.50-21.00; grade 3, 19.50-20.00; grade 4, 18.50-19.00.

Brass Ingot: Red brass, No. 115, 29.50; tin bronze No. 225, 41.00; No. 245, 34.75; high-leaded tin bronze, No. 305, 34.00; No. 1 yellow, No. 405, 25.25; manganese bronze No. 421, 27.75.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 27.00; AZ91C, 31.50; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy.) Strip, $1.68; rod, bar, wire, $1.65.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb, 36.28; 30,000 lb, 36.53; l.c.l. 37.03. Magnet wire deld., 15,000 lb or more 41.83; l.c.l. 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $20.00 per cwt; pipe, full coils $20.00 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $11; forging billets $6; hot-rolled and forged bars, $6.

ZINC

(Prices per lb c.l., f.o.b. mill) Sheets 23.00, ribbon zinc in coils, 18.50-20.50; plates 18.00-22.25.

ZIRCONIUM

Plate $27; H.R. strip $28; C.R. strip $35; forged or H.R. bars $27; wire, 0.015 in., 1 cent per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	86.5	67.5	92.5
Strip, C.R.	92.5	70.5	98.5
Plate, H.R.	84.5	66.5	90.5
Rod, Shapes	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks	....	60.0	....

ALUMINUM*

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	62.5	61.0	...	...
0.156-0.172	52.9	51.3	...	...
0.188	52.9	51.3	...	65.8
0.219-0.234	50.1	48.5	...	...
0.250-0.281	50.1	48.5	...	62.7
0.313	50.1	48.5	...	59.8
Cold-finished				
0.375-0.547	48.9	46.5	58.8	56.2
0.563-0.688	48.9	46.5	55.9	52.7
0.750-1.000	47.7	45.3	51.1	49.6
1.063	47.7	45.3	...	47.9
1.125-1.500	45.9	43.6	49.4	47.9
Rolled				
1.563	44.7	42.4	...	...
1.625-2.000	44.1	41.8	...	46.2
2.125-2.500	43.0	40.7	...	...
2.563-3.375	41.7	39.5	...	...

ALUMINUM*

Sheets and Circles: 1100 and 3003 mill finish c.l. (30,000 lb base; freight allowed over 499 lb)

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	12-49	34.9	...	...
0.135-0.096	12-48	35.4	...	...
0.095-0.077	12-48	36.1	33.6	35.6
0.076-0.061	12-48	36.7	33.8	36.8
0.060-0.048	12-48	37.2	34.1	39.2
0.047-0.038	12-48	37.7	34.6	39.6
0.037-0.030	12-48	38.1	35.0	40.3
0.029-0.024	12-48	38.7	35.3	40.8
0.023-0.019	12-36	39.4	36.1	41.6
0.018-0.017	12-36	40.2	36.7	42.5
0.016-0.015	12-36	41.1	37.5	43.7
0.014	12-24	42.1	38.5	45.0
0.013-0.012	12-24	43.3	39.2	46.0
0.011	12-24	44.3	40.4	47.6
0.010-0.0095	12-24	45.5	41.5	49.2
0.009-0.0085	12-24	46.8	43.0	51.3
0.008-0.0075	12-24	48.4	44.2	53.1
0.007	12-18	49.9	45.7	55.4
0.006	12-18	51.5	47.1	60.4

*72-180 in. lengths. †26 in. max. dia.

ALUMINUM*

Plates and Circles: Thickness 0.250-3.0 in., 24-60 in. width or dia, 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	34.7	38.9
5050-F	34.7	38.9
3004-F	35.7	40.6
5052-F	37.4	42.4
6061-T6	38.6	43.0
2024-T4*	40.8	46.9
7075-T6*	45.6	55.2

*24-48 in. widths or dia., 72-180 in. lengths.

ALUMINUM*

Forging Stock: Round, Class 1, 46.8-36.3, in specific lengths 36-144 in., diameters 0.375-8 in. Rectangles and squares, Class 1, 52.6-40 in. random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20 ft length, plain ends, 90,000 lb base, per 100 ft.

Nom. pipe size, in.		Nom. pipe size, in.	
¾	$15.70	2	$ 48.30
1	24.75	4	132.90
1¼	23.50	6	238.35
1½	40.05	8	358.60

*Alloy designations are standard for use on and after Oct. 1, 1954. To relate them to designations used prior to that time, see STEEL, Aug. 9, 1954, p. 95.

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 94.00, 0.064-in. 73.00, 0.125-in. 60.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot rolled AZ31, 53.00, 20,000 lb or more 0.250-in. and over, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 59.00, 20,000 lb or more, ¼-in. thick, widths 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in., 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 58.20.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 28 clippings 14.00; low copper clippings 14.00; mixed clippings 12.00; old sheet 11.00; borings and turnings 7.00; pistons and struts 8.50; crankcases 11.00; industrial castings 11.00.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.35b	45.98c	....	48.44	26.000	26.000	25.250
Yellow Brass	41.72	34.50d	42.24	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.96	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	52.80	48.93	18.250	18.000	17.500
Commercial Bronze, 90%	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.36	59.43g	57.69	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.56	67.06	67.06	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.45	43.62	54.06	....	18.250	18.000	17.500
Munts Metal	43.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

Copper and Brass: Heavy copper and wire, No. 1 25.00; No. 2 copper 24.00; light copper 22.00; No. 1 composition red brass 20.00; No. 1 composition turnings 19.50; mixed brass turnings 14.00; new brass clippings 18.00; No. 1 brass rod turnings 15.00; light brass 12.50; heavy yellow brass 15.50; new brass rod ends 16.00; auto radiators, unsweated 17.00; cocks and faucets 17.00; brass pipe 17.50.

Lead: Heavy 11.75-12.00; battery plate 6.25-6.50; linotype and stereotype 13.75-14.00; electrotype 12.00-12.50; mixed babbitt 12.50-13.00.

Magnesium: Clippings 18.50-19.50; clean castings 17.50-18.50; iron castings, not over 10% removable Fe, 16.50-17.50.

Monel: Clippings 23.00-25.00; old sheet 21.00-23.00; turnings 16.00-18.00; rods 23.00-25.00.

Nickel: Sheets and clips 60.00-65.00; rolled anodes 60.00-65.00; turnings 40.00; rod ends 60.00-65.00.

Tin: No. 1 pewter 55.00-60.00; block tin pipe 75.00-80.00; No. 1 babbitt 50.00.

Zinc: Old zinc, 5.00-5.25; new die cast scrap, 4.75-5.00; old die cast scrap, 3.25-3.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 16.00-16.25; 51S, 52S clippings 16.00-16.25; 14S, 17S, 24S clippings 15.25-15.50; mixed clipping 14.75-15.00; old sheet 14.00-14.25; old cast 14.00-14.25; clean old cable, free of steel 16.00-16.25; borings and turnings 14.25-14.75.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 27.50; No. 2 copper 26.00; light copper 24.50; refinery brass (60% copper) per dry copper content 24.00.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 27.50; No. 2 copper 26.00; light copper 24.50; No. 1 composition borings 22.50; No. 1 composition solids 22.75; heavy yellow brass solids 17.75; yellow brass turnings 16.75; radiators 18.50.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.70 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 5000-10,000 lb; electrodeposited 39.78, cast 42.04, 2000-5000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.05; 200-499 lb $1.09; 500-999 lb $1.085; 1000 lb or more $1.08.

Zinc: Bar 20.00, bar or flat top 19.00 ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb. in 100 lb drums.

Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 25,000 oz and over 77.325.

Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb 70.6; 100-600 lb 56.3; 700-1900 lb 53.9; 2000-9900 lb 52.1; 10,000 lb or more 51.

Stannous Chloride: (Anhydrous): Less than 50 lb $1.564; 50 lb $1.224; 100-300 lb $1.074; 400-900 lb $1.049; 100-1900 lb $1.025; 2000-4900 lb 98.8; 5000-19,000 lb 92.7; 20,000 lb and over 86.6.

Stannous Sulphate: Less than 5 lb $1.264; 50 lb 96.4; 100-1900 lb 94.4; 2000 lb and over 92.4.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on page 125. Key to footnotes, page 127.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 .....$61.50

INGOTS, Alloy (NT)
Detroit R7 .....$65.00
Houston S5 .....73.00
Midland,Pa. C18 .....65.00
Munhall,Pa. U5 .....65.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Aliquippa,Pa. J5 .....$64.00
Bessemer,Pa. U5 .....64.00
Buffalo R2 .....64.00
Clairton,Pa. U5 .....64.00
Ensley,Ala. T2 .....64.00
Fairfield,Ala. T2 .....64.00
Fontana,Calif. K1 .....72.00
Gary,Ind. U5 .....64.00
Johnstown,Pa. B2 .....64.00
Lackawanna,N.Y. B2 ..64.00
Munhall,Pa. U5 .....64.00
So.Chicago,Ill. R2,U5 ..64.00
So.Duquesne,Pa. U5 ...64.00
Youngstown R2 .....64.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 .....$78.00
Bessemer,Pa. U5 .....78.00
Buffalo R2 .....78.00
Canton,O. R2 .....80.00
Clairton,Pa. U5 .....78.00
Conshohocken,Pa. A3 ..83.00
Ensley,Ala. T2 .....78.00
Fairfield,Ala. T2 .....78.00
Fontana,Calif. K1 .....86.00
Gary,Ind. U5 .....78.00
Geneva,Utah C11 .....78.00
Houston S5 .....85.00
Johnstown,Pa. B2 ....78.00
Lackawanna,N.Y. B2 ..78.00
LosAngeles B3 .....87.50
Munhall,Pa. U5 .....78.00
Seattle B3 .....91.50
So.Chicago R2,U5,W14..78.00
So.Duquesne,Pa. U5 ...78.00
So.SanFrancisco B3 ...87.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$86.00
Buffalo R2 .....86.00
Canton,O. R2, T7 .....86.00
Conshohocken,Pa. A3 ..93.00
Detroit R7 .....86.00
Fontana,Calif. K1 .....105.00
Gary,Ind. U5 .....86.00
Houston S5 .....93.00
Ind.Harbor,Ind. Y1 ....86.00
Johnstown,Pa. B2 .....86.00
Lackawanna,N.Y. B2 ..86.00
LosAngeles B3 .....106.00
Massillon,O. R2 .....86.00
Midland,Pa. C18 .....86.00
Munhall,Pa. U5 .....86.00
So.Chicago R2,U5,W14..86.00
So.Duquesne,Pa. U5 ...86.00
Struthers,O. Y1 .....86.00
Warren,O. C17 .....86.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$96.50
Canton,O. R2 .....96.50
Cleveland R2 .....96.50
Gary,Ind. U5 .....96.50
So.Chicago R2, W14 ..96.50
So.Duquesne,Pa. U5 ...96.50

SKELP
Aliquippa,Pa. J5 .....4.00
Fontana,Calif. K1 .....4.775
Munhall,Pa. U5 .....3.90
Warren,O. R2 .....3.90
Youngstown R2, U5 ....3.90

WIRE RODS
AlabamaCity,Ala. R2 ..4.675
Aliquippa,Pa. J5 .....4.675
Alton,Ill. L1 .....4.85
Buffalo B11, W12 ....4.675
Cleveland A7 .....4.675
Donora,Pa. A7 .....4.675
Fairfield,Ala. T2 .....4.675
Fontana,Calif. K1 .....5.475
Houston S5 .....5.075
IndianaHarbor,Ind. Y1..4.675
Johnstown,Pa. B2 .....4.675
Joliet,Ill. A7 .....4.675
KansasCity,Mo. S5 ....5.015
Kokomo,Ind. C16 .....4.775
LosAngeles B3 .....5.475
Minnequa,Colo. C10 ...4.925
Monessen,Pa. P7 .....4.675
No.Tonawanda,N.Y.B11 4.675
Pittsburg,Calif. C11 ..5.325
Portsmouth P12 .....4.675
Roebling,N.J. R5 .....4.775
So.Chicago,Ill. R2 .....4.675
Sterling,Ill.(1) N15 ....4.675
Sterling,Ill. N15 .....4.775
Struthers,O. Y1 .....4.675
SparrowsPoint,Md. B2..4.775
Torrance,Calif. C11 ...5.475
Worcester,Mass. A7 ...4.975

STRUCTURALS

Carbon Steel Stand. Shapes
Ala.City,Ala. R2 .....4.25
Aliquippa,Pa. J5 .....4.25
Bessemer,Ala. T2 .....4.25
Bethlehem,Pa. B2 .....4.30
Birmingham C15 .....4.25
Clairton,Pa. U5 .....4.25
Fairfield,Ala. T2 .....4.25
Fontana,Calif. K1 .....4.90
Gary,Ind. U5 .....4.25
Geneva,Utah C11 .....4.25
Houston S5 .....4.65
Ind.Harbor,Ind. I-2 ....4.25
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....4.95
Minnequa,Colo. C10 ....4.70
Munhall Pa. U5 .....4.25
Niles,Calif. P1 .....4.80
Phoenixville,Pa. P4 ....3.95
Portland,Oreg. O4 .....5.00
Seattle B3 .....5.00
So.Chicago U5, W14....4.25
So.SanFrancisco B3 ....4.90
Torrance,Calif. C11 ....4.95
Weirton,W.Va. W6 .....4.25

Wide Flange
Bethlehem,Pa. B2 .....4.30
Clairton,Pa. U5 .....4.25
Fontana,Calif. K1 .....5.25
Lackawanna,N.Y. B2 ...4.30
Munhall,Pa. U5 .....4.25
Phoenixville,Pa. P4 ....3.95
So.Chicago,Ill. U5 .....4.25

Alloy Stand. Shapes
Clairton,Pa. U5 .....5.20
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.20
Houston S5 .....5.60
Munhall,Pa. U5 .....5.20
So.Chicago,Ill. U5 .....5.20

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....6.40
Bessemer,Ala. T2 .....6.40
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.40
Fairfield,Ala. T2 .....6.40
Fontana,Calif. K1 .....7.05
Gary,Ind. U5 .....6.40
Geneva,Utah C11 .....6.40
Houston S5 .....6.80
Ind.Harbor,Ind. I-2, Y1.6.40
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 ....7.00
Lackawanna,N.Y. B2 ...6.45
LosAngeles B3 .....7.10
Munhall,Pa. U5 .....6.40
Seattle B3 .....7.15
So.Chicago,Ill. U5, W14.6.40
So.SanFrancisco B3 ....7.05
Struthers,O. Y1 .....6.40

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ...6.45
Munhall,Pa. U5 .....6.40
So.Chicago,Ill. U5 .....6.40

PILING

BEARING PILES
Munhall,Pa. U5 .....4.25
So.Chicago,Ill. U5 .....4.25

STEEL SHEET PILING
Ind.Harbor,Ind. I-2....5.075
Lackawanna,N.Y. B2 ..5.075
Munhall,Pa. U5 .....5.075
So.Chicago,Ill. U5 ....5.075

PLATES

PLATES, Carbon Steel
Ala.City,Ala. R2 .....4.225
Aliquippa,Pa. J5 .....4.225
Ashland,Ky.(15) A10 ..4.225
Bessemer,Ala. T2 .....4.225
Buffalo R2 .....4.225
Clairton,Pa. U5 .....4.225
Claymont,Del. C22 ....4.225
Cleveland J5, R2 .....4.225
Coatesville,Pa. L7 .....4.225
Conshohocken,Pa. A3 ..4.225
Ecorse,Mich. G5 .....4.375
Fairfield,Ala. T2 .....4.225
Fontana,Calif.(30) K1..4.875
Gary,Ind. U5 .....4.225
Geneva,Utah C11 .....4.225
GraniteCity,Ill. G4 ....4.425
Harrisburg,Pa. C5 ....3.975
Houston S5 .....4.625
Ind.Harbor,Ind. I-2, Y1.4.225
Johnstown,Pa. B2 .....4.225
Lackawanna,N.Y. B2 ..4.225
LoneStar,Tex. L6 .....4.55
Mansfield,O. E6 .....4.225
Minnequa,Colo. C10 ...5.075
Munhall,Pa. U5 .....4.225
Newport,Ky. N9 .....4.225
Pittsburgh J5 .....4.225
Riverdale,Ill. A1 .....4.225
Seattle B3 .....5.125
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. R2 .....4.225
So.Chicago,Ill. U5,W14..4.225
SparrowsPoint,Md. B2..4.225
Steubenville,O. W10 ...4.225
Warren,O. R2 .....4.225
Weirton,W.Va. W6 .....4.225
Youngstown R2, U5, Y1 4.225

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 .....6.025
Geneva,Utah C11 .....5.375

PLATES, Wrought Iron
Economy,Pa. B14 .....9.80

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland J5, R2 .....6.45
Conshohocken,Pa. A3 ...6.45
Ecorse,Mich. G5 .....6.60
Fairfield,Ala. T2 .....6.45
Fontana,Calif.(30) K1 ..7.15
Gary,Ind. U5 .....6.45
Geneva,Utah C11 .....6.45
Houston S5 .....6.85
Ind.Harbor,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ...6.45
LosAngeles B3 .....7.35
Munhall,Pa. U5 .....6.45
Pittsburgh J5 .....6.45
Seattle B3 .....7.35
Sharon,Pa. S3 .....6.45
So.Chicago,Ill. U5, W14.6.45
SparrowsPoint,Md. B2 ..6.45
Youngstown U5, Y1 ....6.45

PLATES, Alloy
Claymont,Del. C22 .....5.80
Coatesville,Pa. L7 .....5.80
Fontana,Calif. K1 .....6.45
Gary,Ind. U5 .....5.80
Houston S5 .....6.20
Johnstown,Pa. B2 .....5.80
Munhall,Pa. U5 .....5.80
Newport,Ky. N9 .....5.80
Seattle B3 .....6.70
Sharon,Pa. S3 .....5.80
So.Chicago,Ill. U5, W14.5.80
SparrowsPoint,Md. B2 ..5.80

FLOOR PLATES
Cleveland J5 .....5.275
Conshohocken,Pa. A3 ..5.275
Harrisburg,Pa. C5 .....5.15
Ind.Harbor,Ind. I-2 ....5.275
Munhall,Pa. U5 .....5.275
So.Chicago,Ill. U5 .....5.275

PLATES, Ingot Iron
Ashland c.l. (15) A10..4.475
Ashland l.c.l. (15) A10.4.975
Cleveland c.l. R2 .....4.825
Warren,O. c.l. R2 .....4.825

BARS

BARS, Hot-Rolled Carbon
Ala.City,Ala. R2 .....4.30
Aliquippa,Pa. J5 .....4.30
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....4.30
Birmingham C15 .....4.30
Buffalo R2 .....4.30
Canton,O. R2 .....4.40
Clairton,Pa. U5 .....4.30
Cleveland R2 .....4.30
Ecorse,Mich. G5 .....4.45
Emeryville,Calif. J7 ...5.05
Fairfield,Ala. T2 .....4.30
Fairless,Pa. U5 .....4.45
Fontana,Calif. K1 .....5.00
Gary,Ind. U5 .....4.30
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....5.00
Massillon,O. R2 .....4.40
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.85
N.Tonawanda,N.Y. B11.4.30
Pittsburg,Calif. C11 ...5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 .....5.05
Seattle B3, N14, P23....5.05
So.Chicago, R2 U5, W14 4.30
So.Duquesne,Pa. U5 ....4.30
So.SanFran.,Calif. B3 ..5.05
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Warren,O. R2 .....4.30
Weirton,W.Va. W6 .....4.30
Youngstown R2, U5.....4.30

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....5.075
Buffalo R2 .....5.075
Canton,O. R2, T7 .....5.075
Clairton,Pa. U5 .....5.075
Detroit R7 .....5.075
Ecorse,Mich. G5 .....5.225
Fontana,Calif. K1 ....6.125
Fairless,Pa. U5 .....5.225
Gary,Ind. U5 .....5.075
Houston S5 .....5.475
Ind.Harbor,Ind. I-2, Y1.5.075
Johnstown,Pa. B2 .....5.075
KansasCity,Mo. S5 ....5.675
Lackawanna,N.Y. B2 ..5.075
LosAngeles B3 .....6.125
Massillon,O. R2 .....5.075
Midland,Pa. C18 .....5.075
So.Chicago R2, U5, W14 5.075
So.Duquesne,Pa. U5 ...5.075
Struthers,O. Y1 .....5.075
Warren,O. C17 .....5.075
Youngstown U5.....5.075

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland R2 .....6.45
Ecorse,Mich. G5 .....6.60
Fairfield,Ala. T2 .....6.45
Fontana,Calif. K1 .....7.70
Gary,Ind. U5 .....6.45
Houston S5 .....6.85
Ind.Harb.,Ind. I-2, Y1..6.45
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 ....7.05
Lackawanna,N.Y. B2 ...6.45
LosAngeles B3 .....7.15
Pittsburgh J5 .....6.45
Seattle B3 .....7.20
So.Chicago W14 .....6.45
So.Duquesne,Pa. U5 ....6.45
So.SanFrancisco B3 ....7.20
Struthers,O. Y1 .....6.45
Warren,O. R2 .....6.45
Youngstown U5 .....6.45

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa. B2 .....4.45

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....4.30
Atlanta A11 .....4.50
Fontana,Calif. K1 .....5.00
Niles,Calif. P1 .....4.85
Portland,Oreg. O4 .....5.05
SanFrancisco S7 .....4.70

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....5.20
Gary,Ind. U5 .....5.20
Houston S5 .....5.60
KansasCity S5 .....5.80
Youngstown U5 .....5.20

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....5.40
BeaverFalls,Pa. M12, R2 5.40
Camden,N.J. P13 .....5.85
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7, C20 .....5.40
Detroit R7 .....5.40
Detroit B5, P17 .....5.60
Donora,Pa. A7 .....5.40
Elyria,O. W8 .....5.40
FranklinPark,Ill. N5 ...5.40
Gary,Ind. R2 .....5.40
GreenBay,Wis. P7 .....5.40
Hammond,Ind. L2, M13..5.40
Hartford,Conn. R2 .....5.90
Harvey,Ill. B5 .....5.40
LosAngeles R2, S30 ...6.85
Mansfield,Mass. B5 ....5.95
Massillon,O. R2 R8 ....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.85
NewCastle,Pa.(17) B4 ..5.40
Pittsburgh J5 .....5.40
Plymouth,Mich. P5 ....5.65
Putnam,Conn. W18 ....5.95
Readville,Mass. C14 ....5.95
St.Louis,Mo. M5 .....5.70
So.Chicago,Ill. W14 ....5.40
SpringCity,Pa. K3 .....5.55
Struthers,O. Y1 .....5.40
Waukegan,Ill. A7 .....5.40
Worcester,Mass. W19 ...5.85
Youngstown F3, Y1 ....5.40

BARS, Cold-Finished Alloy (Turned and Ground)
Cumberland,Md.(5) C19.4.65

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....6.625
BeaverFalls,Pa. M12, R26.625
Bethlehem,Pa. B2 .....6.625
Buffalo B5 .....6.80
Camden,N.J. P13 .....6.80
Canton,O. T7 .....6.625
Carnegie,Pa. C12 .....6.625
Chicago W18 .....6.625
Cleveland A7, C20 .....6.625
Detroit R7 .....6.625
Detroit B5, P17 .....6.825
Donora,Pa. A7 .....6.625
Elyria,O. W8 .....6.625
Gary,Ind. R2 .....6.625
GreenBay,Wis. P7 .....6.625
Hammond,Ind. L2, M13 6.625
Hartford,Conn. R2 ....6.925
Harvey,Ill. B5 .....6.625
Lackawanna,N.Y. B2..6.625
LosAngeles S30 .....8.30
Mansfield,Mass. B5 ....6.925
Massillon,O. R2, R8 ...6.625
Midland,Pa. C18 .....6.625
Monaca,Pa. S17 .....6.625
Newark,N.J. W18 .....6.80
Plymouth,Mich. P5 ....6.825
So.Chicago W14 .....6.625
SpringCity,Pa. K3 .....6.80
Struthers,O. Y1 .....6.625
Warren,O. C17 .....6.625
Waukegan,Ill. A7 .....6.625
Worcester,Mass. A7 ...6.925
Youngstown F3, Y1 ...6.625

BARS, Reinforcing (Fabricators)
Ala.City,Ala. R2 .....4.30
Atlanta A11 .....4.50
Birmingham C15 .....4.30
Buffalo R2 .....4.30
Cleveland R2 .....4.30
Emeryville,Calif. J7 ...5.05
Fairfield,Ala. T2 .....4.30
Fairless,Pa. U5 .....4.45
Fontana,Calif. K1 .....5.00
Ft.Worth,Tex.(42) T4 ..4.90
Gary,Ind. U5 .....4.30
Houston S5 .....4.70

Ind.Harbor,Ind. I-2, Y1 4.30
Johnstown,Pa. B2 ..... 4.30
KansasCity,Mo. S5 ..... 4.90
Lackawanna,N.Y. B2 ... 4.30
LosAngeles B3 ..... 5.00
Milton,Pa. M18 ..... 4.30
Minnequa,Colo. C10 .... 4.75
Niles,Calif. P1 ..... 4.85
Pittsburg,Calif. C11 .... 5.00
Pittsburgh J5 ..... 4.30
Portland,Oreg. O4 ..... 5.05
SandSprings,Okla. S5 .. 5.15
Seattle B3, N14, P23... 5.05
So.Chicago R2 ..... 4.30
So.Duquesne,Pa. U5 ... 4.30
So.SanFrancisco B3 .... 5.05
SparrowsPoint,Md. B2 .. 4.30
Sterling,Ill.(1) N15 .... 4.30
Sterling,Ill. N15 ..... 4.40
Struthers,O. Y1 ..... 4.30
Torrance,Calif. C11 .... 5.00
Youngstown R2, U5 .... 4.30

BARS, Reinforcing (Fabricated; to consumers)

Johnstown,Pa., ¼-1" B2 .5.70
KansasCity S5 ..... 6.50
LosAngeles B3 ..... 5.95
Marion,O. P11 ..... 5.55
Seattle B3, N14, P23 .. 6.15
So.SanFrancisco B3 .... 6.00
SparrowsPt. ½-1" B2..5.70
Williamsport,Pa. S19 ..5.60

RAIL STEEL BARS

Avis,Pa.(3) J8 ..... 4.25
ChicagoHts.(3) C2, I-2 4.20
ChicagoHts.(4) C2, I-2 4.30
Ft.Worth,Tex(26) T4 .. 4.75
Franklin,Pa. (3) F5 .. 4.20
Franklin,Pa. (4) F5 .. 4.30
Marion,O.(3) P11 ..... 4.15
Moline,Ill.(3) R2 ..... 4.30
Tonawanda(3) B12 .... 4.15
Tonawanda(4) B12 ..... 4.30
Williamsport,Pa.(3) S19 4.30

BARS, Wrought Iron

Economy,Pa.(S.R.) B14 10.85
Economy,Pa.(D.R.) B14 13.50
Economy(Staybolt) B14 13.80
McK.Rks.(S.R.) L5 ..10.85
McK.Rks.(D.R.) L5 ..14.75
McK.Rks.(Staybolt) L5 16.25

SHEETS

SHEETS, Hot-Rolled Steel (18 gage and heavier)

Ala.City,Ala. R2 ..... 4.05
Allenport,Pa. P7 ..... 4.05
Ashland,Ky.(8) A10 .... 4.05
Cleveland J5, R2 ..... 4.05
Conshohocken,Pa. A3 .. 4.10
Detroit(8) M1 ..... 4.20
Ecorse,Mich. G5 ..... 4.20
Fairfield,Ala. T2 ..... 4.05
Fairless,Pa. U5 ..... 4.10
Fontana,Calif. K1 .... 4.825
Gary,Ind. U5 ..... 4.05
Geneva,Utah C11 ..... 4.15
GraniteCity,Ill. G4 .... 4.25
Houston S5 ..... 4.45
Ind.Harbor,Ind, I-2, Y1 4.05
Irvin,Pa. U5 ..... 4.05
Kokomo,Ind. C16 ..... 4.15
Lackawanna,N.Y. B2 .. 4.05
Mansfield,O. E6 (37) ... 4.05
Mansfield,O. E6 (38) ... 4.80
Munhall,Pa. U5 ..... 4.05
Newport,Ky. N9 ..... 4.05
Niles,O. N12 ..... 4.05
Pittsburg,Calif. C11 .... 4.75
Pittsburgh J5 ..... 4.05
Portsmouth,O. P12 .... 4.05
Riverdale,Ill. A1 ..... 4.05
Sharon,Pa. S3 ..... 4.05
So.Chicago,Ill. W14 .... 4.05
SparrowsPoint,Md. B2 .. 4.05
Steubenville,O. W10 .... 4.05
Warren,O. R2 ..... 4.05
Weirton,W.Va. W6 .... 4.05
Youngstown U5, Y1 .... 4.05

SHEETS, H.R. (19 ga. lighter)

Ala.City,Ala. R2 ..... 5.35
Kokomo,Ind. C16 ..... 5.20
Niles,O. N12 ..... 4.95

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy

Cleveland J5, R2 ..... 6.10
Conshohocken,Pa. A3 .. 6.15
Ecorse,Mich. G5 ..... 6.25
Fairfield,Ala. T2 ..... 6.10
Fairless,Pa. U5 ..... 6.15
Fontana,Calif. K1 .... 6.875
Gary,Ind. U5 ..... 6.10
Ind.Harbor,Ind. I-2, Y1 6.10
Irvin,Pa. U5 ..... 6.10
Lackawanna(35) B2 .... 6.10
Munhall,Pa. U5 ..... 6.10
Pittsburgh J5 ..... 6.10
Sharon,Pa. S3 ..... 6.10
So.Chicago,Ill. U5 .... 6.10
SparrowsPoint(36) B2 .. 6.10
Warren,O. R2 ..... 6.10
Weirton,W.Va. W6 .... 6.10
Youngstown U5, Y1 .... 6.10

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 .... 4.30
Cleveland R2 ..... 4.65
Ind.Harbor,Ind. I-2 .... 4.30
Warren,O. R2 ..... 4.65

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 ..... 4.95
Cleveland J5, R2 ..... 4.95
Ecorse,Mich. G5 ..... 5.10
Fairfield,Ala. T2 ..... 4.95
Fairless,Pa. U5 ..... 5.00
Follansbee,W.Va. F4 ... 4.95
Fontana,Calif. K1 ..... 6.05
Gary,Ind. U5 ..... 4.95
GraniteCity,Ill. G4 ..... 5.15
Ind.Harbor,Ind. I-2, Y1 4.95
Irvin,Pa. U5 ..... 4.95
Lackawanna,N.Y. B2 .. 4.95
Middletown,O. A10 .... 4.95
Pittsburg,Calif. C11 .... 5.90
Pittsburgh J5 ..... 4.95
Portsmouth,O. P12 .... 4.95
SparrowsPoint,Md. B2 .. 4.95
Steubenville,O. W10 .... 4.95
Warren,O. R2 ..... 4.95
Weirton,W.Va. W6 ..... 4.95
Youngstown Y1 ..... 4.95

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ..... 7.50
Ecorse,Mich. G5 ..... 7.65
Fairless,Pa. U5 ..... 7.55
Fontana,Calif. K1 ..... 8.55
Gary,Ind. U5 ..... 7.50
IndianaHarbor,Ind, Y1... 7.50
Irvin,Pa. U5 ..... 7.50
Lackawanna(37) B2 ... 7.50
Pittsburgh J5 ..... 7.50
SparrowsPoint(38) B2 .. 7.50
Warren,O. R2 ..... 7.50
Weirton,W.Va. W6 .... 7.50
Youngstown Y1 ..... 7.50

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 ..... 5.55
Middletown,O. A10 ..... 5.45
Warren,O. R2 ..... 5.55

SHEETS, Culvert (16 Ga.)	Cu Alloy	Cu Fe
Ashland,Ky.	A10 6.50	....
Canton,O.	R2 ...6.50	7.10
Fairfield	T2 .....5.70	....
Gary,Ind.	U5 ....5.70	5.95
Ind.Harbor	I-2 ..6.25	6.50
Irvin, Pa.	U5 ...5.70	....
Kokomo,Ind.	C16 6.35	....
MartinsFry.,O.	W10 6.25	....
Newport,Ky.	N9 ..6.25	6.50
Pitts.,Calif.	C11 .6.45	....
SparrowsPt.	B2, .5.70	....

SHEETS, Culvert — Pure Iron

Ashland,Ky. A10 ..... 6.75
MartinsFerry,O. W10 ... 6.50
Gary,Ind. U5 ..... 5.95

SHEETS, Galvanized Steel Hot-dipped

Ala.City,Ala. R2 ..... 5.45‡
Ashland,Ky. A10 ..... 5.45*
Butler,Pa. A10 ..... 5.45†
Canton,O. R2 ..... 5.45‡
Dover,O. R1 ..... 5.45‡
Fairfield,Ala. T2 .... 5.45*
Gary,Ind. U5 ..... 5.45*
GraniteCity,Ill. G4 .... 5.85‡
Ind.Harbor,Ind. I-2 ... 5.45†
Irvin,Pa. U5 ..... 5.45†
Kokomo,Ind. C16 ..... 5.50‡
MartinsFerry,O. W10 .. 5.45*
Middletown,O. A10 .... 5.45†
Newport,Ky. N9 ..... 5.45†
Niles,O. N12 ..... 5.45‡
Pittsburg,Calif. C11 .. 6.20‡
SparrowsPt.,Md. B2 .. 5.45‡
Steubenville,O. W10 .... 5.45‡
Weirton,W.Va. W6 .... 5.45*

*Continuous and noncontinuous. †Continuous. ‡ Noncontinuous.

SHEETS, Galvanized High-Strength Low-Alloy

Irvin,Pa. U5 ..... 8.20
SparrowsPoint(39) B2 .. 8.20

SHEETS, Galvannealed Steel

Canton,O. R2 ..... 5.55
Irvin,Pa. U5 ..... 5.85
Kokomo,Ind. C16 ..... 5.95†
Newport,Ky. N9 ..... 6.00
Niles,O. N12 ..... 6.00

SHEETS, Galvanized Ingot Iron

Ashland,Ky.(8) A10 .... 5.70
Canton,O. R2 ..... 6.20

SHEETS, Galvanized Ingot Iron (Hot-dipped continuous)

Ashland,Ky. A10 ..... 5.70
Butler,Pa. A10 ..... 5.70
Middletown,O. A10 .... 5.70

SHEETS, Electrogalvanized

Cleveland(28) R2 ..... 6.30
Niles,O.(28) R2 ..... 6.30
Weirton,W.Va. W6 .... 6.175

SHEETS, Aluminum Coated

Butler,Pa. A10 ..... 8.625

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 .... 5.375
Cleveland R2 ..... 5.375
Gary,Ind. U5 ..... 5.375
GraniteCity,Ill. G4 .... 5.575
Ind.Harbor,Ind. I-2 ... 5.375
Irvin,Pa. U5 ..... 5.375
Middletown,O. A10 .... 5.375
Niles,O. N12 ..... 5.375
Youngstown Y1 ..... 5.375

BLUED STOCK, 29 ga.

Follansbee,W.Va. F4 ..7.375
Follansbee(23) F4 ..... 6.60
Yorkville,O. W10 ..... 7.375

SHEETS, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10 5.85
Gary,Ind. U5 ..... 5.85
Mansfield,O. E6 ..... 5.85
Middletown,O. A10 .... 5.85
Niles,O. N12 ..... 5.85
Weirton,W.Va. W6 .... 5.85

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 .... 6.25

SHEETS, Well Casing

Fontana,Calif. K1 .... 6.325

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div. Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&FuelAssoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.
M16 Md. Fine&Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng. HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P23 Pacific Steel Rolling

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div. Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless WeldedProducts
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.

T2 Tenn. Coal & Iron Div.
T3 Tenn.Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan.San.
T12 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W.Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2....4.05
Allenport,Pa. P7 .....4.05
Alton,Ill. L1 .....4.225
Ashland,Ky.(8) A10 ....4.05
Atlanta A11 .....4.25
Bessemer,Ala. T2 .....4.05
Birmingham C15 .....4.05
Bridgeport,Conn.(10)S15 4.05
Buffalo(27) R2 .....4.05
Conshohocken,Pa. A3....4.10
Detroit M1 .....4.20
Ecorse,Mich. G5 .....4.20
Fairfield,Ala. T2 .....4.05
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....4.05
Houston,Tex. S5 .....4.45
Ind.Harbor,Ind. I-2, Y1.4.05
Johnstown,Pa.(25) B2 ..4.05
KansasCity,Mo.(9) S5 ..4.65
Lackaw'na,N.Y.(25) B2.4.05
LosAngeles(25) B3 .....4.80
Milton,Pa. M18 .....4.05
Minnequa,Colo. C10 ....5.15
NewBritain(10) S15 ....4.05
N.Tonawanda,N.Y. B11.4.05
Pittsburg,Calif. C11 ....4.80
Portsmouth,O. P12 .....4.05
Riverdale,Ill. A1 .....4.05
SanFrancisco S7 .....5.00
Seattle(25) B3, P23 ....5.05
Seattle N14 .....5.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
So.SanFrancisco(25) B3.4.80
SparrowsPoint,Md. B2 ..4.05
Sterling(1) N15 .....4.05
Sterling,Ill. N15 .....4.15
Torrance,Calif. C11 ....4.80
Warren,O. R2 .....4.05
Weirton,W.Va. W6 .....4.05
Youngstown U5 .....4.05

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 .....6.70
Fontana,Calif. K1 .....6.10
Gary,Ind. U5 .....6.70
Houston,Tex. S5 .....7.10
KansasCity,Mo. S5 .....7.30
LosAngeles B3 .....7.90
NewBritn.,Conn.(10)S15 6.45
Newport,Ky. N9 .....6.70
Seattle P23 .....7.80
Sharon,Pa. S3 .....6.70
So.Chicago W14 .....6.70
Youngstown U5 .....6.70

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 .....6.15
Conshohocken,Pa. A3 ...6.15
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....6.15
Fontana,Calif. K1 .....7.25
Gary,Ind. U5 .....6.15
Houston S5 .....6.55
Ind.Harbor,Ind. I-2, Y1.6.15
KansasCity,Mo. S5 ....6.75
Lackawanna,N.Y. B2 ..6.15
LosAngeles(25) B3 .....6.90
Seattle(25) B3, P23.....7.15
Sharon,Pa. S3 .....6.15
So.SanFrancisco(25) B3.6.90
SparrowsPoint,Md. B2 ..6.15
Warren,O. R2 .....6.15
Weirton,W.Va. W6 ....6.15
Youngstown U5, Y1 ....6.15

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ....4.30
Warren,O. R2 .....4.65

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....5.75
Baltimore T6 .....5.75
Bridgeport,Conn.(10)S15 5.75
Cleveland A7, J5 .....5.75
Dearborn,Mich. D3 .....5.90
Detroit D2, M1 .....5.90
Detroit P20 .....5.95
Dover,O. G6 .....5.75
Ecorse,Mich. G5 .....5.90
Follansbee,W.Va. F4 ...5.75
Fontana,Calif. K1 .....7.65
FranklinPark,Ill. T6 ....5.85
Ind.Harbor,Ind. I-2 ....6.00
Indianapolis C8 .....5.90
Lackawanna,N.Y. B2 ...5.75
LosAngeles C1 .....7.80
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 ....5.75
NewBedford,Mass. R10..6.20
NewBritain(10) S15 ....5.75
NewCastle,Pa. B4, E5 ..5.75
NewHaven,Conn. A7 ....6.50
NewHaven,Conn. D2 ....6.20
Pawtucket,R.I. R3 ....6.40
Pawtucket,R.I. N8 ....6.30
Pittsburgh J5 .....5.75
Portsmouth,O. P12 ....5.75
Riverdale,Ill. A1 .....5.85
Rome,N.Y.(32) R6 ....5.75
Sharon,Pa. S3 .....5.75
SparrowsPt.,Md. B2 ....5.75
Trenton,N.J. R5 .....7.00
Wallingford,Conn. W2...6.20
Warren,O. B9, R2, T5..5.75
Weirton,W.Va. W6 .....5.75
Worcester,Mass. A7 ....6.60
Youngstown C8, Y1 ....5.75

STRIP, Cold-Rolled Alloy

Carnegie,Pa. S18 .....12.45
Cleveland A7 .....12.45
Dover,O. G6 .....12.45
Fontana,Calif. K1 ....14.55
FranklinPark,Ill. T6 ..12.45
Harrison,N.J. C18 ....12.45
Mattapan,Mass. T6 ....12.80
Pawtucket,R.I. N8 ....12.80
Sharon,Pa. S3 .....12.45
Worcester,Mass. A7 ....12.75
Youngstown C8.....12.90

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7, J5 .....8.60
Dearborn,Mich. D3 ....8.75

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	5.75	8.35	9.30	11.45	14.15
Bridgeport,Conn.(10) S15	5.75	8.05	9.30	11.15	13.85
Bristol,Conn. W1	...	...	9.30	11.45	....
Carnegie,Pa. S18	...	8.05	9.00	11.15	13.85
Cleveland A7	5.75	8.05	9.00	11.15	13.85
Cleveland C7	...	8.05	9.00	11.15	13.85
Dearborn,Mich. D3	5.90	8.25	9.20	....	....
Detroit D2	5.90	8.25	9.20	10.95	....
Dover,O. G6	5.85	8.05	9.00	11.15	13.85
FranklinPark,Ill. T6	5.85	8.05	9.00	11.15	13.85
Harrison,N.J. C18	...	...	9.30	11.45	14.15
Indianapolis C8	6.00	8.20	9.00	11.15	13.85
Mattapan,Mass. T6	6.30	8.35	9.30	11.45	14.15
NewBritn.,Conn.(10) S15.	5.75	8.05	9.00	11.15	13.85
NewCastle,Pa. B4	5.75	8.05	9.00	11.15	....
NewCastle,Pa. E5	5.75	8.05	9.00	11.15	13.85
NewHaven,Conn. D2	6.20	8.35	9.30	11.25	....
NewYork W3	...	8.35	9.30	11.45	14.15
Pawtucket,R.I. N8	6.30	8.35	9.30	11.45	14.15
Riverdale,Ill.(1) A1	5.85	8.05	9.00	11.15	13.85
Rome,N.Y.(32) R6	5.75	8.05	9.00	10.95	13.25
Sharon,Pa. S3	5.75	8.05	9.00	11.15	13.85
Trenton,N.J. R5	...	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	6.20	8.35	9.30	11.45	14.15
Warren,O. T5	5.75	8.05	9.00	11.15	13.85
Weirton,W.Va. W6	5.75	8.05	9.00	11.15	13.85
Worcester,Mass. A7, T6..	6.60	8.35	9.30	11.45	14.15
Youngstown C8	5.85	8.05	9.00	11.15	13.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.90	15.60	....
Buffalo W12	...	...	12.90	....	....
Harrison,N.J. C18	...	...	12.90	15.60	19.00
NewYork W3	...	...	12.90	15.60	19.00
Trenton,N.J. R5	...	...	12.90	15.60	19.00
Worcester,Mass. T6	...	...	12.90	15.60	19.00
Worcester,Mass. W12	...	...	12.90	....	....
Youngstown C8	...	...	13.25	15.95	19.35

STRIP, Cold-Rolled Ingot Iron

Dover,O. G6 .....8.60
Ecorse,Mich. G5 .....8.75
Lackawanna,N.Y. B2 ..8.425
Pittsburgh J5 .....8.60
Sharon,Pa. S3 .....8.60
SparrowsPoint,Md. B2..8.425
Warren,O. R2 .....8.60
Weirton,W.Va. W6 .....8.60
Youngstown Y1 .....8.60

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....6.35

STRIP, Electrogalvanized

Dover,O. G6 .....5.75*
Riverdale,Ill. A1 .....5.85*
Youngstown C8 .....5.75*

*Plus galvanizing extras.

STRIP, Galvanized (Continuous)

Sharon,Pa. S3 .....6.15
Warren,O. S3 .....6.15

TIGHT COOPERAGE HOOP

Atlanta A11 .....4.775
Riverdale,Ill. A1 .....4.625
Sharon,Pa. S3 .....4.475
Youngstown U5 .....4.475

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	...	9.10	10.10	11.00
Brackenridge,Pa. A4	....	...	9.10	10.10	11.00
IndianaHarbor,Ind. I-2	8.025	8.50	9.10	10.10	....
Mansfield,O. E6	8.025	8.50	9.10	10.10	11.00
Newport,Ky. N9	8.025	8.50	9.10	10.10	11.00
Niles,O. N12	8.025	8.50	9.10	10.10	....
Vandergrift,Pa. U5	....	8.50	9.10	10.10	11.00
Warren,O. R2	8.025	8.50	9.10	10.10	11.00
Zanesville,O. A10	....	8.50	9.10	10.10	11.00

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	....	...	9.85	10.85	11.75
GraniteCity,Ill. G4	8.425*	8.95*	9.55*	10.55*	....
IndianaHarbor,Ind. I-2	8.225	8.75*	9.35*	....	....
Vandergrift,Pa. U5	....	9.25†	9.85†	10.85†	11.75†
Vandergrift,Pa. U5	8.225*	8.75*	9.35*	10.35*	11.25*
Warren,O. R2	8.225†	9.25	9.85	10.85	11.75
Zanesville,O. A10	....	9.25	9.85	10.85	11.75

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	11.95	12.50	13.00	14.00
Brackenridge,Pa. A4	11.95	....	....	....
Newport,Ky. N9	11.95	....	....	....
Vandergrift,Pa. U5	11.95‡	12.50‡	13.00‡	14.00‡
Zanesville,O. A10	11.95‡	12.50‡	13.00‡	14.00‡

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.00	16.60	17.10	....
Butler,Pa. A10	....	....	16.60	17.10	....
Vandergrift,Pa. U5	14.00	15.00	16.60	17.10	12.70
Warren,O. R2	....	....	....	....	12.70‡

* Semiprocessed. † Fully processed only. ‡ Coils annealed; semiprocessed ½c lower. ‡ Coils. ¼-cent higher.

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.50	$7.75	$8.15
Fairfield,Ala. T2	7.60	7.85	8.25
Fairless,Pa. U5	7.60	7.85	8.25
Gary,Ind. U5	7.50	7.75	8.15
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.50	7.75	8.15
Irvin,Pa. U5	7.50	7.75	8.15
Niles,O. R2	7.50	7.75	8.15
Pittsburg,Calif. C11	8.25	8.50	8.90
SparrowsPoint,Md. B2	7.60	7.85	8.25
Weirton,W.Va. W6	7.50	7.75	8.15
Yorkville,O. W10	7.50	7.75	8.15

ELECTROTIN (22-27 Gage; Dollars per 100 lb)

Aliquippa,Pa. J5	6.175	....	....
Niles,O. R2	6.175	6.375	6.575

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.80	$9.05
Fairfield,Ala. T2	8.90	9.15
Fairless,Pa. U5	8.90	9.15
Gary,Ind. U5	8.80	9.05
Ind.Har. I-2, Y1	8.80	9.05
Irvin,Pa. U5	8.80	9.05
Pitts. Cal. C11	9.55	9.80
Sp.Pt.,Md. B2	8.90	9.15
Warren,O. R2	8.80	9.05
Weirton,W.Va. W6	8.80	9.05
Yorkville,O. W10	8.80	9.05

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.60
Fairfield,Ala. T2	6.70
Fairless,Pa. U5	6.70
Gary,Ind. U5	6.60
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.60
Irvin,Pa. U5	6.60
Niles,O. R2	6.60
Pittsburg,Calif. C11	7.35
SparrowsPoint,Md. B2	6.70
Warren,O. R2	6.60
Weirton,W.Va. W6	6.60
Yorkville,O. W10	6.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.20
Gary,Ind. U5	6.20
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.20
Irvin,Pa. U5	6.20
Yorkville,O. W10	6.20

MANUFACTURING TERNES (Special Coated; Base Box)

Gary,Ind. U5	$7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Light Coated, 6 lb; Base Box)

Yorkville,O. W10	$8.75

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.85

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2 ..5.75
Aliquippa,Pa. J5 .....5.75
Alton,Ill. L1 .....5.925
Atlanta A11 .....5.95
Bartonville,Ill. K4 .....5.85
Buffalo W12 .....5.75
Chicago W13 .....5.75
Cleveland A7, C20 .....5.75
Crawfordsville,Ind. M8..5.85
Donora,Pa. A7 .....5.75
Duluth,Minn. A7 .....5.75
Fairfield,Ala. T2 .....5.75
Fostoria,O.(24) S1 .....5.95
Houston S5 .....6.15
Jacksonville,Fla. M8 ...6.27
Joliet,Ill. A7 .....5.75
KansasCity,Mo. S5 .....6.35
Kokomo,Ind. C16 .....5.85
LosAngeles B3 .....6.70
Minnequa,Colo. C10 ....6.00
Monessen,Pa. P7 .....5.75
Newark 6-8 ga. I-1 ....6.40
No.Tonawanda B11 ....5.75
Palmer,Mass. W12 .....6.05
Pittsburg,Calif. C11 ....6.70
Portsmouth,O. P12 .....5.75
Rankin,Pa. A7 .....5.75
So.Chicago,Ill. R2 .....5.75
So.SanFrancisco C10 ....6.70
SparrowsPoint,Md. B2 ..5.85
Sterling,Ill.(1) N15 ....5.75
Sterling,Ill. N15 .....5.85
Struthers,O. Y1 .....5.75
Waukegan,Ill. A7 .....5.75
Worcester,Mass. A7 ....6.05

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 .....7.20
Alton,Ill. L1 .....7.375
Bartonville,Ill. K4 .....7.30
Buffalo W12 .....7.20
Cleveland A7 .....7.20
Donora,Pa. A7 .....7.20
Duluth,Minn. A7 .....7.20
Fostoria,O. S1 .....7.20
Johnstown,Pa. B2 .....7.20
LosAngeles B3 .....8.15
Millbury,Mass.(12) N6 ...7.50
Minnequa,Colo. C10 ....7.45
Monessen,Pa. P7, P16...7.20
Muncie,Ind. I-7 .....7.40
Palmer,Mass. W12 .....7.50
Pittsburg,Calif. C11 ....8.15
Portsmouth,O. P12 .....7.20
Roebling,N.J. R5 .....7.50
So.Chicago,Ill. R2 .....7.20
So.SanFrancisco C10 ....8.15
SparrowsPt.,Md. B2 ....7.30
Struthers,O. Y1 .....7.20
Trenton,N.J. A7 .....7.50
Waukegan,Ill. A7 .....7.20
Worcester A7,J4,T6,W12 7.50

WIRE, Upholstery Spring

Aliquippa,Pa. J5 .....6.90
Alton,Ill. L1 .....7.075
Buffalo W12 .....6.90
Cleveland A7 .....6.90
Donora,Pa. A7 .....6.90
Duluth,Minn. A7 .....6.90
Johnstown,Pa. B2 .....6.90
KansasCity,Mo. S5 .....7.50
LosAngeles B3 .....7.85
Minnequa,Colo. C10 ....7.075
Monessen,Pa. P7, P16 ..6.90
NewHaven,Conn. A7 ....7.20
Palmer,Mass. W12 .....7.20
Pittsburg,Calif. C11 ....7.85
Portsmouth,O. P12 .....6.90
Roebling,N.J. R5 .....7.20
So.Chicago,Ill. R2 .....6.90
So.SanFrancisco C10 ....7.85
SparrowsPoint,Md. B2 ..7.00
Trenton,N.J. A7 .....7.20
Waukegan,Ill. A7 .....6.90
Worcester,Mass. A7 ....7.20

WIRE, Fine & Weaving (8" Coils)

Alton,Ill. L1 .....11.375
Bartonville,Ill. K4 ....11.30
Buffalo W12 .....11.20
Chicago W13 .....11.20
Chicago A7 .....11.20
Crawfordsville,Ind. M8.11.30
Fostoria,O. S1 .....11.20
Jacksonville,Fla. M8 ..11.73
Johnstown,Pa. B2 .....11.20
Kokomo,Ind. C16 .....11.20
Minnequa,Colo. C10 ...10.95
Monessen,Pa. P16 .....11.20
Muncie,Ind. I-7 .....11.40
Palmer,Mass. W12 .....11.50
Roebling,N.J. R5 .....11.50
So.SanFrancisco C10 ...11.55
Waukegan,Ill. A7 .....11.20
Worcester,Mass. A7,T6.11.50

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4 .....9.90
Buffalo W12 .....9.90
Johnstown,Pa. B2 .....9.90
Minnequa,Colo. C10 ...10.025
Monessen,Pa. P16 .....9.90
Muncie,Ind. I-7 .....10.10
Portsmouth,O. D2 .....9.90
Roebling,N.J. R5 .....10.20
SparrowsPt.,Md. B2 ...10.00

ROPE WIRE (A)

Alton,Ill. L1 .....9.45
Bartonville,Ill. K4 .....9.35
Buffalo W12 .....9.75
Fostoria,O. S1 .....9.75
Johnstown,Pa. B2 .....9.75
Monessen,Pa. P7 .....9.35
Monessen,Pa. P16 .....9.75
Muncie,Ind. I-7 .....9.95
Palmer,Mass. W12 ....10.05
Portsmouth,O. P12 ....9.35
Roebling,N.J. R5 .....10.05
SparrowsPt. B2 .....9.85
Struthers,O. Y1 .....9.75
Worcester J4, T6 .....6.65

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE

(Continued)

WIRE, Tire Bead

Alton, Ill. L1	12.75
Bartonville, Ill. K4	13.25
Monessen, Pa. P16	13.15
Portsmouth, O. P12	13.15
Roebling, N.J. R5	13.45

WIRE, Cold-Rolled Flat

Anderson, Ind. G6	7.95
Baltimore T6	8.25
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville, Ind. M8	8.05
Dover, O. G6	7.95
Fostoria, O. S1	7.95
Kokomo, Ind. C16	8.05
Franklin Park, Ill. T6	8.05
Massillon, O. R8	7.95
Milwaukee C23	8.15
Monessen, Pa. P7, P16	7.95
Pawtucket, R.I. N8	8.25
Rome, N.Y. (32) R6	7.95
Trenton, N.J. R5	8.25
Worcester A7, T6, W12	8.25

WIRE, Merchant Quality

(6 to 8 gage)	An'ld Galv.
Ala. City, Ala. R2	6.90 7.30**
Aliquippa J5	6.90 7.425‡
Atlanta A11	7.00 7.55
Bartonville (48) K4	7.00 7.55
Buffalo W12	6.90 7.30†
Cleveland A7	6.90
Crawfordsville M8	7.00 7.55
Donora, Pa. A7	6.90 7.30†
Duluth, Minn. A7	6.90 7.30†
Fairfield T2	6.90 7.30†
Houston, Tex. S5	7.30 7.70†
Jacks'ville, Fla. M8	7.425 7.95
Johnstown B2 (48)	6.90 7.45*
Joliet, Ill. A7	6.90 7.30†
Kansas City, Mo. S5	7.50 7.90†
Kokomo C16	7.00 7.40†
Los Angeles B3	7.85
Minnequa C10	7.15 7.55**
Monessen P7 (48)	6.90 7.45
Palmer W12	7.20 7.60†
Pitts., Calif. C11	7.85 8.25†
Portsmouth, O. P12	6.90
Rankin A7	6.90 7.30†
So. Chicago R2	6.90 7.30**
S.S. Fran. C10	7.85 8.25**
Sparrows Pt. B2 (48)	7.00 7.55*
Sterling (1) (48) N15	6.90 7.45
Struthers, O. (48) Y1	6.90 7.40‡
Worcester A7	7.20

* Based on 11c zinc; † 5c zinc; ‡ Less than 10c zinc; **Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga. Col.

Ala. City, Ala R2	146**
Ala. City, 17 ga. R2	241**
Ala. City, 18 ga. R2	251**
Aliq'ppa, Pa. 9-14½ ga. J5	149‡
Atlanta A11	151
Bartonville, Ill. K4	151
Crawfordsville, Ind. M8	151
Donora, Pa. A7	146†
Duluth, Minn. A7	146†
Fairfield, Ala. T2	146†
Houston, Tex. S5	154†
Johnstown, Pa. (43) B2	149
Joliet, Ill. A7	146†
Kansas City, Mo. S5	158†
Kokomo, Ind. C16	148†
Minnequa, Colo. C10	154**
Monessen, Pa. 9 ga. P17	151
Pittsburg, Calif. C11	169†
Rankin, Pa. A7	146†
So. Chicago, Ill. R2	146**
Sterling, Ill. (1) N15	149

† Based on 5c zinc; * 11c zinc; ‡ 10c zinc; **Subject to zinc equalization extras.

BALE TIES, Single loop

	Col.
Alabama City, Ala. R2	155
Atlanta A11	157
Bartonville, Ill. K4	157
Crawfordsville, Ind. M8	157
Donora, Pa. A7	155
Duluth, Minn. A7	155
Fairfield, Ala. T2	155
Joliet, Ill. A7	155
Houston S5	163
Kansas City, Mo. S5	167
Kokomo, Ind. C16	157
Minnequa, Colo. C10	160
Pittsburg, Calif. C11	179
So. Chicago, Ill. R2	155
So. San Fran., Calif. C10	179
Sparrows Point, Md. B2	157
Sterling, Ill. (1) N15	155

WIRE, Barbed

	Col.
Alabama, City, Ala. R2	159**
Aliquippa J5	156‡
Atlanta A11	164
Bartonville, Ill. K4	164
Crawfordsville, Ind. M8	164
Donora, Pa. A7	159†
Duluth, Minn. A7	159†
Fairfield, Ala. T2	159†
Houston, Tex. S5	167†
Johnstown, Pa. B2	162*
Joliet, Ill. A7	159†
Kansas City, Mo. S5	171†
Kokomo, Ind. C16	161†
Minnequa, Colo. C10	165**
Monessen, Pa. P7	163
Pittsburg, Calif. C11	179†
Rankin, Pa. A7	159†
So. Chicago, Ill. R2	159**
S. San Francisco C10	179**
Sparrows Point, Md. B2	164*
Sterling, Ill. (1) N15	162

† Based on 5c zinc; * 11c zinc; ‡ 10c zinc; **Subject to zinc equalization extras.

WIRE (16 gage)	An'd Galv.	Stone Stone
Ala. City R2	13.15	14.70**
Bartonville K4	13.25	15.10
Buffalo W12	13.15	
Cleveland A7	13.15	
Crawfordsville M8	13.25	15.10
Fostoria, O. S1	13.25	14.80†
Johnstown B2	13.15	15.00*
Kokomo C16	12.60	14.15†
Minnequa C10	13.40	15.10**
Palmer, Mas. W12	13.15	14.70*
Pitts., Calif. C11	13.50	15.05†
So. Chicago R2	13.15	14.70
Sparrows Pt. B2	13.25	15.10*
Sterling (1) N15	13.15	15.00
Waukegan A7	13.15	14.70†
Worcester A7	13.45	

* Based on 11c zinc; † 5c zinc; ‡ 10c zinc; ** Subject to zinc equalization extras.

NAILS, Stock

To dealers & mfrs. (7)	Col.
Alabama City, Ala. R2	137
Aliquippa, Pa. J5	137
Atlanta A11	139
Bartonville, Ill. K4	139
Chicago, Ill. W13	137
Cleveland A9	142
Crawfordsville, Ind. M8	139
Donora, Pa. A7	137
Duluth, Minn. A7	137
Fairfield, Ala. T2	137
Galveston, Tex. D7	139
Houston, Tex. S5	145
Johnstown, Pa. B2	137
Joliet, Ill. A7	137
Kansas City, Mo. S5	149
Kokomo, Ind. C16	139
Minnequa, Colo. C10	142
Monessen, Pa. P7	137
Pittsburg, Calif. C11	156
Rankin, Pa. A7	137
So. Chicago, Ill. R2	137
Sparrows Pt., Md. B2	139
Sterling, Ill. (1) N15	137
Worcester, Mass. A7	143

NAILS, CUT (100 lb keg)

To dealers (33)	
Conshohocken, Pa. A3	$8.30
Wheeling, W.Va. W10	6.30

STAPLES, Polished Stock

To dealers & mfrs. (7)	Col.
Aliquippa, Pa. J5	138
Atlanta A11	140
Bartonville, Ill. K4	140
Crawfordsville, Ind. M8	140
Donora, Pa. A7	138
Duluth, Minn. A7	138
Fairfield, Ala. T2	138
Johnstown, Pa. B2	138
Joliet, Ill. A7	138
Kokomo, Ind. C16	140
Minnequa, Colo. C10	143
Monessen, Pa. P7	138
Pittsburg, Calif. C11	157
Rankin, Pa. A7	138
Sparrows Pt., Md. B2	140
Sterling, Ill. (1) N15	138
Worcester, Mass. A7	144

FENCE POSTS

	Col.
Chicago Hts., Ill. C2, I-2	150
Duluth, Minn. A7	150
Franklin, Pa. F5	150
Johnstown, Pa. B2	150
Marion, O. P11	150
Minnequa, Colo. C10	155
Moline, Ill. R2	155
So. Chicago, Ill. R2	150
Tonawanda, N.Y. B12	150
Williamsport, Pa. S19	150

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(Base discounts, per cent off list, f.o.b. midwestern plants).

4 in. and shorter:	
½-in. & smaller diam	2
Over 4 in. through 6 in.:	
½ in. & smaller diam	+3
6 in. and shorter:	
⅝-in. and ⅞-in.	+4
1 in. and larger	+6
Longer than 6 in.:	
All diameters	+15
Lag bolts, all diams.:	
6 in. and shorter	6
Over 6 in. long	+2
Ribbed Necked Carriage	+4
Blank	10
Plow	23
Step, Elevator, Tap and Sleigh Shoes	10
Tire Bolts	+3
Boiler & Fitting-Up Bolts	21

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	55
H.P., Hex, regular & heavy:	
¾" and smaller	55
⅞" to 1⅛", inclusive	58
1¼" to 1½", inclusive	60
1⅝" and larger	55
C.P. Hex regular & heavy:	
All sizes	55
Hot Galv. Nuts (all types):	
¾" or smaller	38
⅞" to 1⅛", inclusive	41
Finished Hex Nuts:	
New standard, all sizes	55
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	55

SQUARE HEAD SET SCREWS

(1035 steel; packaged; per cent off list)

1 in. diam. x 6 in. and shorter	34
1 in. and smaller diam. x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam. & larger	14
N.F. thread, all diams	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5—10
Plated finishes	30—10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
¼-in. through ⅝-in.	38
⅝-in. through 1 in.	15
Longer than 6 in.:	
¼-in. through ⅝-in.	26
⅝-in. through 1 in.	7

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in., larger 9.25
⅞-in. under..List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	19.00
1¼	13	....	23.21	18.77
1½	13	21.40	25.65	20.75
1¾	13	25.28	30.31	24.52
2	13	28.33	33.97	27.48
2¼	13	31.91	38.26	30.95
2½	12	34.63	41.52	33.59
2¾	12	38.15	45.74	37.00
2¾	12	41.31	49.53	40.07
3	12	44.05	52.82	42.72

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. Toe Rails All No. 2	60 lb Under
Bessemer, Pa. U5	4.45	4.35	4.40	5.35
Ensley, Ala. T2	4.45	4.35	...	5.35
Fairfield, Ala. T2	...	...	...	5.35
Gary, Ind. U5	4.45	4.35	4.40	...
Huntington, W.Va. W7	...	...	...	5.35
Indiana Harbor, Ind. I-2	4.45	4.35	4.40	...
Johnstown, Pa. B2	...	...	...	(16) 5.35
Lackawanna, N.Y. B2	4.45	4.35	...	5.35
Minnequa, Colo. C10	4.45	4.35	...	5.85
Steelton, Pa. B2	4.45	4.35	...	5.35
Williamsport, Pa. S19	...	...	...	5.35

TIE PLATES

Fairfield, Ala. T2	5.275
Gary, Ind. U5	5.275
Ind. Harbor, Ind. I-2	5.275
Lackawanna, N.Y. B2	5.275
Minnequa, Colo. C10	5.275
Seattle B3	5.425
Steelton, Pa. B2	5.275
Torrance, Calif. C11	5.425

TRACK BOLTS (20) Treated

Cleveland R2	11.50
Kansas City, Mo. S5	11.50
Lebanon, Pa. B2	11.50
Minnequa, Colo. C10	11.50
Pittsburgh O3, P14	11.50
Seattle, Wash. B3	12.00

AXLES

Ind. Harbor, Ind. S13	6.75
Johnstown, Pa. B2	6.75

JOINT BARS

Bessemer, Pa. U5	5.425
Fairfield, Ala. T2	5.425
Ind. Harbor, Ind. I-2	5.425
Joliet, Ill. U5	5.425
Lackawanna, N.Y. B2	5.425
Minnequa, Colo. C10	5.425
Steelton, Pa. B2	5.425

SCREW SPIKES

Cleveland R2	11.00

STANDARD TRACK SPIKES

Fairfield, Ala. T2	7.30
Ind. Harbor, Ind. I-2 Y1	7.30
Kansas City, Mo. S5	7.30
Lebanon, Pa. B2	7.30
Minnequa, Colo. C10	7.30
Pittsburgh J5	7.30
Seattle B3	7.80
So. Chicago, Ill. R2	7.30
Struthers, O. Y1	7.30
Youngstown R2	7.30

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron: 98+% Fe, annealed.	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.l.f. N.Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N. J., in bags	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ¼ in. x 1.3 in.	22.00
Annealed, 99.5% Fe.	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns—82.00-148.00	
Aluminum: Atomized, 500 lb drums, frgt, allowed:	
Carlots	30.00
Ton lots	32.00
Antimony, 500 lb lots	32.00*
Brass, ¼-ton lots	29.75-37.75†
Bronze, ¼-ton lots	31.00-39.00†
Copper: Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese: Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	89.50
Nickel-Silver, ¼-ton lots	44.25‡
Nickel-Silver, ¼-ton lots	47.00**
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302	91.00
Tin	14.50*
Zinc, ¼-ton lots, 17.25-31.00‡	
Tungsten Melting grade, 99% 60 to 200 mesh:	Dollars
1000 lb and over	4.95
Less than 1000 lb	5.10
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1¼" to 1 7/16"; 1 7/16" to 1 15/16" 4.78c; 1 15/16" to 7 5/16" 5.15c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon and 0.35c H.S.-L.A.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 gage & heavier; 60" & narrower.
(38) 14 gage & lighter.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.10c.
(43) 9-14½ gage.
(48) 6-7 gage.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5
Ambridge, Pa. N2	13.5	...	17.5	...	20	...	21.5	...	21.5	...	20.75	...	23.25	...
Lorain, O. N3	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5
Youngstown Y1	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Alton, Ill. L1	...	...	....	....	....	....	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Benwood, W. Va. W10	24	+4.5	15.25	+10.25	7.25	+17.25	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Butler, Pa. F6	25	+3.5	17	+8.5	9.5	+15	....	..	....	...	....	..	....	...
Etna, Pa. N2	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Fairless, Pa. N3	...	...	....	....	....	....	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Fontana, Calif. K1	...	...	....	....	....	....	10.75	+6.5	13.75	+2.5	16.25	1	18.75	2.25
Ind. Harbor Y1	...	...	....	....	....	....	22.75	5.5	25.75	9.5	28.25	13	30.75	14.25
Lorain, O. N3	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Sharon, Pa. S4	25	+3.5	17	+8.5	9.5	+15	....	..	....	...	....	..	....	...
Sharon, Pa. M6	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Sparrows Pt., Md. B2	23	+5.5	15	+10.5	7.5	+17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Youngstown R2, Y1	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Wheatland, Pa. W9	23	+5.5	15	+10.5	7.5	+17	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25

Size—Inches	1¼		2		2½		3		3½		4	
List Per Ft	27.5c		37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	2.73		3.68		5.82		7.62		9.20		10.89	
	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Alton, Ill. L1	30.25	14.25	30.75	14.75	32.25	15	32.25	15	....	...	....	...
Benwood, W. Va. W10	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Etna, Pa. N2	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Fairless, Pa. N3	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Fontana, Calif. K1	19.25	3.25	19.75	3.75	21.25	4	21.25	4	12.5	+5.25	12.5	+5.25
Ind. Harbor, Ind. Y1	31.25	15.25	31.75	15.75	33.25	16	33.25	16	24.5	6.75	25.5	6.75
Lorain, O. N3	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Sharon, Pa. M6	13.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Youngstown R2, Y1	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Wheatland, Pa. W9	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75

*Galvanized pipe discounts based on current price of zinc (11.50c, East St. Louis).

Stainless Steel

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	41.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	41.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	44.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	43.75	43.75
304L	....	....	36.00	41.00	39.25	42.25	44.75	48.75	48.75
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	48.00	48.00
309	26.50	34.75	42.75	49.25	49.25	50.50	53.75	62.00	62.00
309S	28.50	37.50	46.75	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	62.75	67.50	69.00	72.25	72.25
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.50	54.50	53.25	55.50	58.75	62.75	62.75
316L	....	....	51.50	59.50	58.25	60.50	63.75	67.75	67.75
317	33.00	43.50	57.25	66.75	67.50	68.25	70.75	77.00	77.00
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	80.25	80.25
321	22.75	29.50	35.25	40.75	41.00	42.00	45.75	50.50	50.50
330	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	31.00	41.00	48.25	56.00	56.50	57.50	62.25	70.50	70.50
348	....	....	48.25	....	....	57.50	62.25	70.50	70.50
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	39.75	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	34.25	34.25
416	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	52.75	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75
430F	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	18.75	24.50	28.25	27.50	29.25	30.50	35.25	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.50	38.25	50.25	39.50	40.75	59.75	59.75
501	....	....	14.00	14.50	21.25	16.00	18.25	29.00	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	30.00	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

Stainless:	Plates—Carbon Base 10%	Plates—Carbon Base 20%	Sheets Carbon Base 20%
302	....	31.00	31.00
304	27.60–28.10	32.50–33.20	32.50
310	36.50	41.00	....
316	32.60–33.10	37.70–42.75	42.75
318	37.00–37.50	42.20–42.70	....
321	29.36–29.80	34.40–37.00	37.00
347	30.40–30.90	35.50–40.50	40.50
405	23.40–23.90	30.60–31.10	....
410	22.00–23.40	30.10–30.60	....
430	23.40	30.60	....
Inconel	46.90	61.90	....
Nickel	38.30	51.70	....
Monel	39.70	52.66	....
Copper*	....	....	46.00

	Strip, Carbon Base—Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	28.85	35.85	25.00	32.25

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.26	5% Cr Hot Work	0.405
Extra Carbon	0.31-.315	W-Cr Hot Work	0.425
Special Carbon	0.37	V-Cr Hot Work	0.445
Oil Hardening	0.405	Hi-Carbon-Cr	0.73

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.030
18.25	4.25	1	4.75	...	2.245-2.415
18	4	2	9	...	2.615
18	4	2	....	...	1.705
18	4	1	....	...	1.540
14	4	2	5	...	2.185
13.75	3.75	2	5	...	2.185
13.5	4	3	....	...	1.805
9	3.5	..	....	....	1.115
6	4	2	....	5	1.045
6	4	3	....	6	1.290
1.5	4	1	....	8.5	0.900

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
Birmingham R2	52.38	52.88	....	....
Birmingham U5	....	52.88	56.50†	....
Gadsden,Ala. R2	52.38	52.88	....	....
Woodward,Ala. W15	52.38	52.88	56.50†	....
Cincinnati, deld.	....	60.58	....	....
Buffalo District				
Buffalo R2	56.00	56.50	57.00	57.50
Buffalo H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No.Tonawanda,N.Y. T9	....	56.50	57.00	57.50
Boston, deld.	66.65	67.15	67.65	....
Rochester,N.Y., deld.	59.02	59.52	60.02	....
Syracuse,N.Y., deld.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Chicago R2	56.00	....	56.50	....
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, deld.	58.17	58.67	58.67	59.17
Muskegon,Mich., deld.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O., deld.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
NewYork, deld.	....	62.28	62.78	....
Newark, deld.	61.02	61.52	62.02	62.52
Birdsboro,Pa. B10	58.00	58.50	....	....
Chester,Pa. C31	....	48.50	49.00	....
Philadelphia, deld.	....	50.16	50.66	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Philadelphia, deld.	59.66	....	....	....
Troy,N.Y. R2	58.00	58.50	59.00	59.50
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	57.87	57.87	58.37
McKeesRocks, deld.	....	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaca, deld.	....	58.16	58.16	58.66
Verona, Trafford, deld.	58.19	58.69	58.69	59.19
Brackenridge, deld.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., deld.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T2	....	52.50*	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, deld.	61.76	62.26	....	....

*Low phos, southern grade. †Phos., 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.00 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$65.00
Buffalo H1	66.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	85.00
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	88.00
Wenatchee,Wash. OH & Fdry, freight allowed K2	85.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate A7	$61.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, deld.	67.55
Troy,N.Y. R2	64.00

Warehouse Steel Products

Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Birmingham and St. Paul, 15 cents; Philadelphia, New York and Boston, 10 cents; Buffalo, 25 cents on C.R. sheets, galv. sheets, C.F. and alloy bars and 20 cents on other commodities; Seattle, Spokane, Wash., no charge.

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	Stainless Type 302‡‡	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.§	H.R. Alloy 4140††‡		Carbon	Floor
Baltimore	6.02	7.51	7.79	....	6.69	...	6.68	8.52[6]	12.04	6.72	6.37	7.76
Birmingham	6.35	7.35	8.25[2]	....	6.60	...	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.52	44.78[8]	7.47	...	7.20	8.60	12.45	7.49	7.37	8.50
Buffalo	6.35	7.40	8.79	....	6.70	...	6.50	7.85	12.15	6.72	6.65	7.90
Carnegie, Pa.	6.38	...	8.30	....	6.72	...	6.51	7.85	12.15	6.72	6.65	6.90
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	45.55	6.62	...	6.51	7.50	11.90	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.30	45.80	6.86	...	6.75	7.80	12.15	6.86	6.81	7.89
Cleveland	6.38	7.38	8.45	45.66	6.72	...	6.57	7.60	11.96	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.79	12.10	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	....	6.70	...	6.50	7.45[4]	....	6.69	6.52	7.64
Houston	7.25	7.70	9.83	....	7.60	9.30	7.60	9.40	....	7.50	7.25	8.65
Los Angeles	7.40	9.25	9.85	50.15	7.75	11.75	7.35	10.05	13.20	7.55	7.35	9.45
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.69	11.99	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	...	6.86	7.85	....	7.04	6.87	...
New York	6.97	7.91	8.79	44.45	7.56	...	7.37	8.73[6]	12.28	7.38	7.27	8.68
Norfolk, Va.	7.00	...	...	....	7.10	...	7.10	8.60	....	7.10	7.10	7.95
Philadelphia	6.19	7.44	8.26	41.98[8]	6.96	8.80	6.74	8.36[6]	12.10	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	45.50	6.72	...	6.51	7.85	11.90	6.69	6.52	7.64
Portland, Oreg.	7.60	8.75	9.70	48.50	7.85	...	7.55	10.95	14.00	7.50	7.45	9.35
Richmond, Va.	6.43	7.39	8.67	....	6.77	...	6.71	8.33	....	7.08	6.65	8.08
St. Louis	6.67	7.67	8.59	43.89	6.91	...	6.80	7.89	12.19	7.09	6.81	7.93
St. Paul	7.04	8.04	8.96	....	7.28	...	7.17	8.26	....	7.35	7.18	8.30
San Francisco	7.55	9.85	9.40	51.65	7.80	...	7.35	10.05	13.20	7.50	7.40	9.45
Seattle	8.10	9.80	10.15	50.50	8.20	...	7.80	10.95	13.65	7.75	7.80	9.60
Spokane	8.35	9.65[7]	10.05	....	7.80	...	7.80	10.85‡‡	14.40	7.45	7.55	9.60
Washington	6.70	7.99	7.97	....	7.37	...	7.38	9.09	....	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, based on 11-cent zinc except in New York, Philadelphia, Los Angeles, Cincinnati (11.50-cent zinc) and in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extra; §as rolled; **½-in. and heavier; ††as annealed; ‡‡prices include $2 for crating; §§under ½-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over, except in Seattle, 2000 to 9999 lb; stainless sheets, 8000 lb except in New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999; [2]—500 to 9999 lb; [4]—4000 lb and over; [6]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 lb to 3999 lb; [8]—f.o.b. local delivery in lots of 10,000 lb and over.

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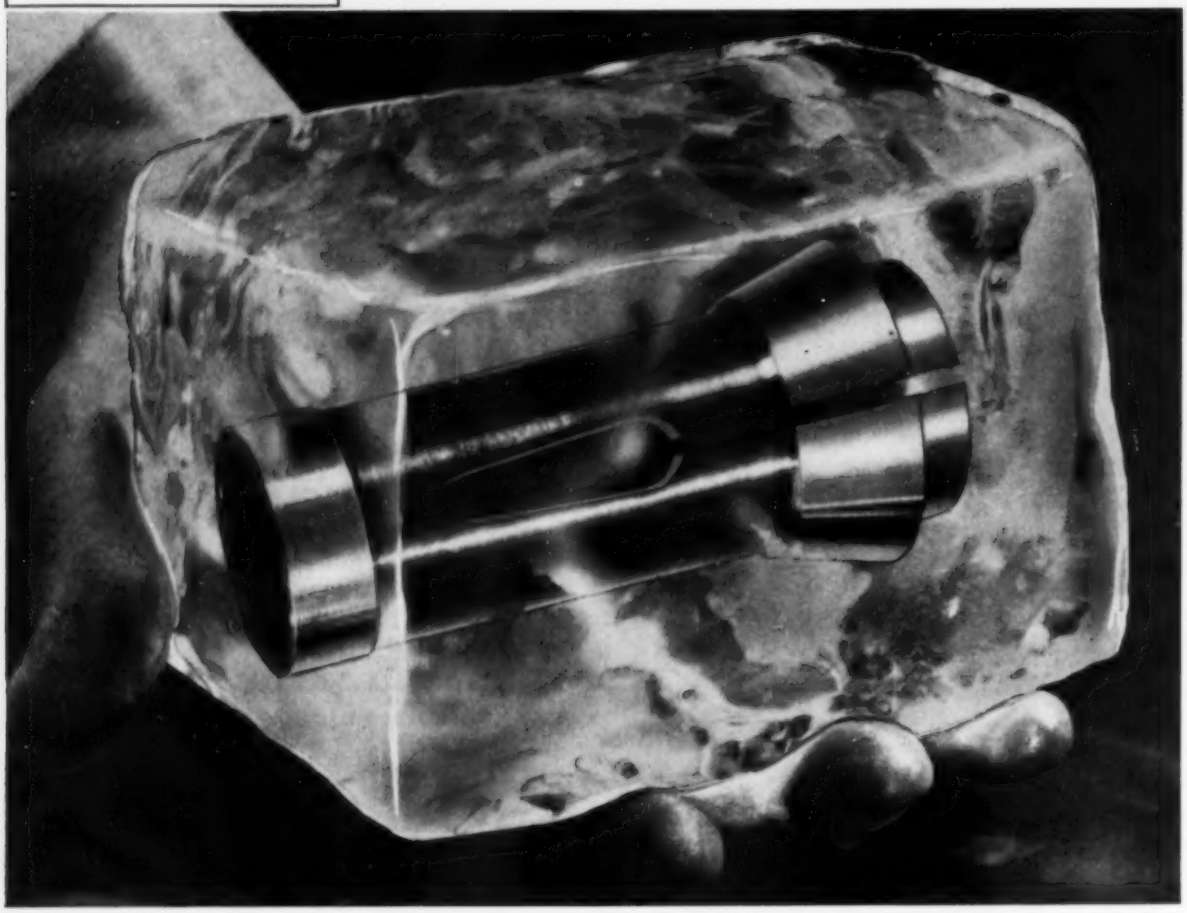

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ANTISEP water-soluble cutting base carries heat away *fast* . . . so fast that just-machined work can be handled barehanded! And it's fortified to provide exceptional lubrication as well.

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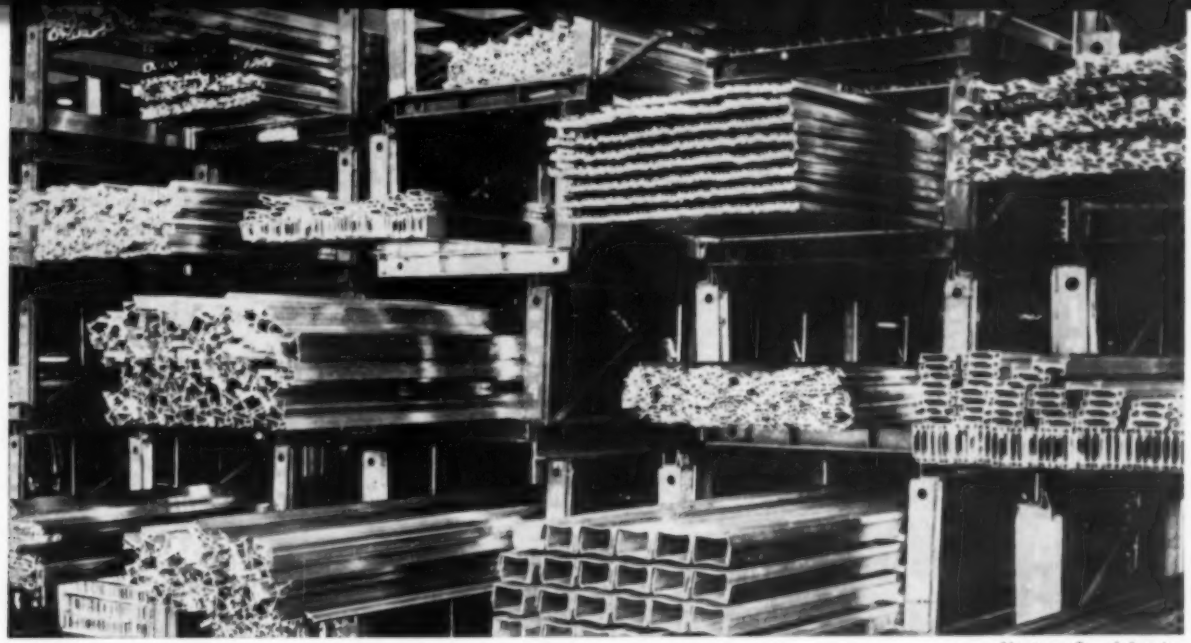

Aluminum Co. of America

An old technique is being used on new products as . . .

Aluminum, Magnesium Take to the Warehouses

Producers adopt old consignment method in broadening their distribution programs. Dow Chemical appoints four warehouses while Alcoa, Reynolds and Kaiser expand outlets

GROWTH in the civilian supply of aluminum and magnesium is intensifying efforts to sell these metals through warehouses.

Although warehouses have sold aluminum for some time, more of them are handling it now, and Dow Chemical Co., Midland, Mich., is beginning to use them to distribute its wrought magnesium products. The company has named four: Reliance Steel Co., Los Angeles; A. R. Purdy Co. Inc., Lyndhurst, N. J.; Fullerton Steel & Wire Co., Chicago; and Hubbell Metals Inc., St. Louis. It soon will add a fifth.

Old Method—Like the three big producers of aluminum wrought products, Dow is using the consignment method to stock warehouses. While Aluminum Co. of America, Pittsburgh, has used this sales technique to some degree since 1928, it has grown in use because of the inadequacy of former sales arrangements and the growing competition in sales of aluminum.

Reynolds Metals Co., Louisville, and Kaiser Aluminum & Chemical Sales Inc., Oakland, Calif., adopted the consignment method this year, while Alcoa was broadening its use. All three promote their distributors by advertising their names and location.

New Twist — The consignment method being used by the aluminum producers was used widely in the distribution of steel through warehouses. It was largely discontinued in the early 1930s, although a few specialty steel products still are moved that way.

While you can hear arguments pro and con on the consignment system, it does enable warehouses to get started in the distribution of a line of products without running the risk of investing capital in heavy stocks. Consignment also enables producers to make sure a distributor has a full line of the products that should find a market in his area.

Coast to Coast — Alcoa, Reynolds and Kaiser have distributors from coast to coast. For Alcoa's distributors see STEEL, Oct. 18, p. 110. For Reynolds' distributors see STEEL, Sept. 13, p. 152. For Kaiser's distributors see STEEL, Oct. 4, p. 87. A look at the lists shows steel warehouses, as well as nonferrous warehouses, are distributing aluminum.

In promoting sales for its distributors, Alcoa has a "product of the quarter" four times a year, which it pushes through advertising. Architectural goods are featured this quarter.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 125 & 126

Sparked by steadily rising automotive demand, the flat-rolled steel market is exhibiting more life than at any time over the last year.

The pickup in orders is especially notable in cold-rolled sheets. But hot-rolled and specialty grades also are more active and galvanized sheets continue under strong buying pressure. Strip sales, noticeably slow last quarter, are improving. One Pittsburgh mill expects to operate at 90 per cent of capacity through November.

Deliveries are becoming increasingly extended, up to seven weeks in some instances on cold-rolled. Some mills are practically sold out for the last two months of this year. In gen-

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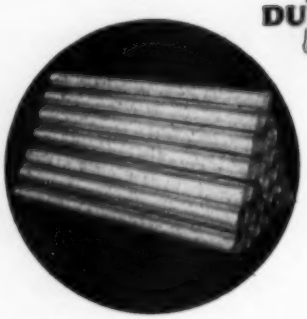

When ready to order, how about checking with us here at DURALOY? For more than thirty years we have specialized in high-alloy castings. In fact, we were among the first to produce static castings and the first to produce centrifugal castings. We are old hands at producing castings alloyed to fit each specific requirement and to finish them to any extent desired.

Melt, castings and finishing are carefully controlled and quality tested by our staff of metallurgists, chemists, X-ray and gamma-ray technicians. If you would like more preliminary information, send for Bulletin No. 3150-G.

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eral, shipment promises range five to six weeks.

Hot-rolled sheets can be had in three weeks, but deliveries of continuous galvanized fall generally in first quarter next year with the noncontinuous product not far behind. Incidentally, Jones & Laughlin Steel Corp. will join the ranks of continuous galvanized sheet producers next year. Its $50 million expansion program for 1955 includes installation of a continuous galvanizing line at Pittsburgh.

Impact of more active automotive buying is felt even by producers who ordinarily do not cater in a big way to the auto trade. For example, St. Louis area mills are in receipt of orders for cold-rolled sheets from out-district consumers who are finding it difficult to place needed tonnage with their regular suppliers.

Demand from other consuming channels also is improving. Appliance makers are showing more interest, and requirements of agricultural implement and machinery builders are increasing. J. L. Mauthe, president, Youngstown Sheet & Tube Co. says the pickup in buying reflects depleted inventories, and he feels future demand will more closely approximate actual consumption.

Hurricane damage along the eastern seaboard resulted in stepped-up demand for galvanized roofing sheets, also nails.

Steel Bars . . .

Bar Prices, Page 124

Moderate pickup in demand for merchant bars is stimulated by increasing automotive requirements and heavier needs of miscellaneous manufacturing industry. The mild improvement appears in evidence at all the important marketing centers, reflecting low consumer inventories.

Hot carbon bar volume is increasing slowly. Deliveries have not been materially affected. Consumers can still count on shipment anywhere from a week to three weeks on most specifications. In a few instances deliveries can be had within a week.

Nearby shipment of cold-drawn carbon bars are available. Buyers stand a good chance of getting delivery from stock on the more popular specifications, especially if they shop around. Even some cold-drawn alloy bars can be had from stock, though, in general, three weeks or so is required.

New England bar sellers' orders for carbon and alloy bars are better, notably from drop forge shops. In this area, deliveries are not materially extended on grades and sizes that

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BEDFORD OHIO

Mr. H. J. Sendlweg
Chief Engineer
The Lemcheck Manufacturing Co.
Cincinnati, Ohio

Dear Mr. Sendlweg:

In answer to your inquiry of the 12th, we have integrated facilities for engineering and fabricating complete assemblies, component parts or heavy weldments to your specifications.

With fully equipped plants in Bedford and Euclid, Ohio, our company has the largest independent machine shop and custom welding facilities in the Cleveland area. We do not offer a pure design-engineering service, but are prepared to work with you in the final refinement and production of your products. Experience gained in developing and producing several proprietary products . . . as well as those of our customers . . . has given us a broad, flexible range of capabilities.

I will be in Cincinnati next week and look forward to seeing you. In the meantime, if you will send blueprints of the products you mentioned, I will have our engineering and production people prepare estimates of cost and delivery.

Many thanks for your interest.

Cordially yours,
THE LEWIS WELDING
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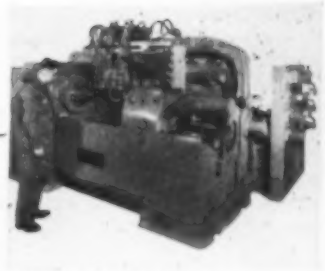
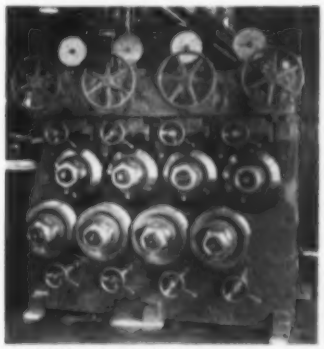
James T. Lewis, Jr.

James T Lewis, Jr.
President

JTL:al

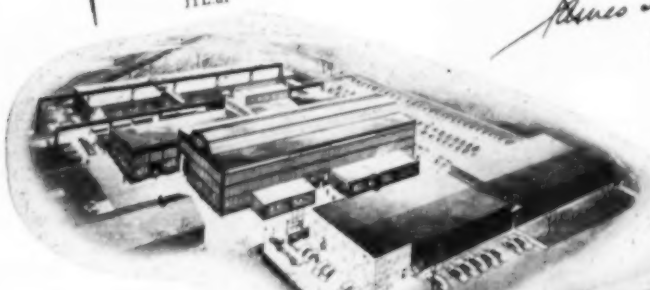


SPECIAL MACHINERY
This high-production 100-h.p. lathe was custom-built by LEWIS.

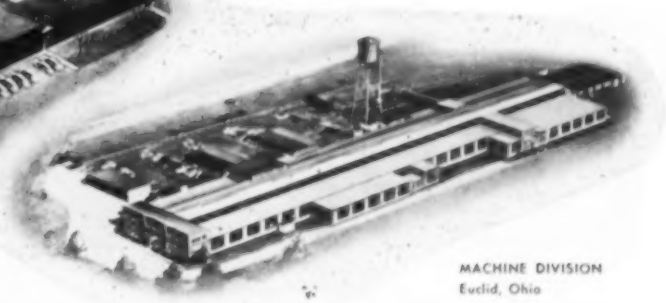


FINISHED COMPONENTS
This roller straightener was built to exacting customer specifications by LEWIS.

PRECISION WELDMENTS
Massive press base being welded automatically



GENERAL OFFICES AND WELDING DIVISION
Bedford, Ohio



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can be shipped from stock, but where new rolling is involved, shipments take three to four weeks. At Chicago the uptrend in bar demand is highlighted by increasing activity in farm implement production.

U. S. Steel Corp. has revised quantity and size extras on hot-rolled carbon and alloy bars, effective Oct. 19. The changes reflect higher costs incurred in production of small tonnages and odd sizes.

Plates . . .

Plate Prices, Page 124

Things are looking up in the steel market generally, but plate producers don't find much in the way of new business to shout about.

October bookings will slightly better September's volume. The increase in ordering, however, is disappointing, and sellers can't see much improvement in sight for November.

Deliveries generally range from 10 days to two weeks. Buying, as a rule, is for immediate requirements with consumers not inclined to order for inventory with mill tonnage available for prompt shipment.

Construction is taking substantial quantities of plates, but the seasonal decline in building is starting and will be reflected in slackening steel requirements from this market area. Lag in ship work and railroad car demands continues to present a big handicap. Pittsburgh mills report warehouses, freight car builders and large pipe contractors are not increasing their requirements for November. On the other hand, tank and boiler work is seasonally more active while requirements of the chemical industries are holding up well.

Demand for field-erected tanks is stimulating demand mildly in New England.

Steel Import Prices

(Base, per 100 lb, landed, duty paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast*
Deformed Bars, Intermediate, ASTM-A-305	$5.05	$5.05	$4.95	$5.33
Bar Size Angles	4.60	4.60	4.60	4.98
Structural Angles	4.55	4.55	4.55	4.98
I-Beams	4.50	4.50	4.50	4.83
Wide Flange Beams	4.80	4.80	4.80	5.08
Sheet and Plate, 10 gage, 11 gage, 5' x 10'	5.50	5.50	5.50	5.78
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	26.80	27.00	26.80	27.60
Barbed Wire (†)	6.05	6.05	6.05	6.23
Merchant Bars	4.95	4.95	4.95	5.33
Hot-Rolled Bands	5.15	5.15	5.15	5.43
Wire Rods, Thomas Commercial No. 5	5.10	5.17	5.15	5.42
Wire Rods, O-H Cold Heading Quality No. 5	5.23	5.30	5.28	5.55
Bright Common Wire Nails	6.85	6.95	6.90	7.15

*Not including $2.20 per net ton customarily charged in most West Coast ports for wharfage and handling. †Per 82-lb. net, reel.

Sizes OD				
Seamless A.P.I. Casing, Grade J-55:				
5½ in.	15.5	$1.47/ft	$1.51/ft	$1.32/ft
7 in.	23	2.10/ft	2.17/ft	1.90/ft
Seamless N-80 Casing:				
5½ in.	17	1.94/ft	2.00/ft	1.75/ft
7 in.	23	2.50/ft	2.70/ft	2.36/ft
Seamless J-55 Tubing:				
2⅜ in.	4.7	0.60/ft	0.63/ft	0.55/ft
2⅞ in.	6.5	0.80/ft	0.83/ft	0.73/ft

Sources of shipment: Western continental European (Schuman Plan) countries.

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on all units insures greater strength, rigidity, lateral thrust control and a longer, safer operating life.

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SUTORBILT CORPORATION

Stainless Steel . . .

Stainless Steel Prices, Page 128

Fourth quarter orders are already slightly improved over those in third quarter, with further gains expected. Automakers are stepping up requirements, contributing to an optimistic fourth quarter outlook. Warehouse ordering remains dull. On the brighter side, most consumers have worked inventories down.

Wire . . .

Wire Prices, Pages 136 & 137

Shipments of wire and wire products hold at even keel. Rod manufacturers wire orders are slowly increasing, but customers continue to order for the short term.

Merchant trade products are moving slower seasonally. Chain link fence sales and orders for construction items are strong but expected to dip next month.

To cushion the seasonal decline, some Pittsburgh district mills will utilize production facilities to build up their own warehouse inventories over the winter.

Wiremakers have full order books for building and pipe mesh for the remainder of this year at Chicago. Prospects for 1955 are considered bright. Road fabric demand has tapered off.

Improved and additional wire and wire specialty manufacturing facilities are planned by Jones & Laughlin Steel Corp. in a $50 million expansion program for 1955.

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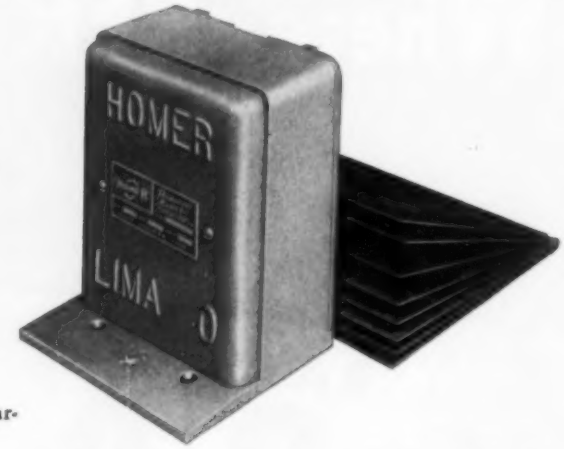

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Current Ferroalloy Quotations

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.

(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.). Base price per net ton $190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala.; Portland, Oreg., and Tacoma, Wash. Add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $198 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices 3c for max, 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered. Spot, add 2c.

Electromanganese: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed, 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max, 0.025% C (Simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.16, ton lots $1.18; less ton $1.20. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max). $3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 65c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.05c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3½ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.05c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.75c per lb of briquet. Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.9c. Packaged c.l. 7.7c, ton lot 8.5c, less ton 9.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $12 per lb of contained Cb, less ton $12.05. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $6.25 per lb of contained Cb plus Ta, deld.; less ton lots $6.30.

Silicas Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ¼" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.o.b. Niagara Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Sigio, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, Pa., $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

Structural Shapes . . .

Structural Shape Prices, Page 124

Seasonal leveling off in structural market activity appears to be fairly general, but the slackening is much more noticeable in commercial lines of construction than in bridgework and certain types of governmental and institutional building, such as schools. Structurals are in adequate supply with deliveries running two to four weeks.

Fabricators report a considerable amount of work continues to be figured. Work due for early letting in the East includes two state turnpike bridges in Hudson county, N. J., involving 9125 tons. In New England, bucking the seasonal downtrend, estimating is reported increasing rather than decreasing. Air base hangars and bridges are taking larger tonnages. More shop work is developing.

West Coast fabricators report keen competition for new business, especially in the Pacific Northwest.

The Maryland Sate Road Commission's proposed Baltimore harbor tunnel, costing $130 million, will be ready for traffic Dec. 1, 1957, six months earlier than originally planned. The tunnel will be 1.7 miles long and the approaches 13.5 miles in length. Steel estimates will be out shortly. J. E. Greiner Co., Baltimore, is consulting engineer in charge.

Included in a $50 million plant and equipment expansion program projected by Jones & Laughlin Steel Corp. for 1955 is the installation of additional equipment for producing a new joist section at the company's 14-in. bar mill at Aliquippa, Pa.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

5300 tons, viaduct and ramps, Northeast expressway, Chelsea, Mass., to West End Iron Works, Cambridge, Mass.; Berke-Moore Co., Inc., Boston, general contractor.

4800 tons, section N-24, state turnpike, Hudson county, N. J., to Harris Structural Steel Co., New York.

4325 tons, section N-7, state turnpike, Hudson county, N. J., to Bethlehem Steel Co., Bethlehem, Pa.

3800 tons, bridge superstructure, Connecticut river, Chicopee, West Springfield, Mass., to American Bridge Division, U. S. Steel Corp., Pittsburgh, direct by the Department of Highways, Boston.

1150 tons, state office building, Augusta, Me., to American Bridge Division, U. S. Steel Corp., Pittsburgh, through Joseph Rugo Inc., Boston, general contractor.

690 tons, construction, Messina county, N. Y., through Power Authority of New York, to Arco Welding & Machine Works, Jersey City, N. J.

540 tons, power plant extension, Eastman Kodak Co., Rochester, N. Y., to Frank M. Weaver & Co., Philadelphia.

495 tons, bridgework, Kings county, N. Y., through John A. Johnson & Sons Co., to Harris Structural Steel Co., New York.

440 tons, three schools, Huntington, Long Island, N. Y., to Fabricators Steel & Mfg. Co., Bronx, New York.

375 tons, state bridges, Fall River-Boston expressway, Fall River, Mass., to Bethlehem Steel Co., Bethlehem, Pa. through Callan Construction Co., Bristol, R. I., general contractor.

335 tons, miscellaneous construction, New Jersey plaza in connection with the Lincoln tunnel tube No. 3, Weehawken, N. J., to Prospect Iron Works.

310 tons, junior-senior high school, Selins Grove, Pa., to Milton Steel & Supply Co., Milton, Pa.

265 tons, Bald Eagle high school, Center county, Pa., to Bethlehem Steel Co., Bethlehem, Pa.

290 tons, service building, Consolidated Edison Co., Mt. Pleasant, N. Y., to County Iron Works.

250 tons, multipurpose hangar, Larson Field, Washington state, reported to unstated out-of-state fabricators; Donald M. Drake and George A. Fuller, Portland, Oreg., joint contractors, low $497,000 by U. S. Engineer, Walla Walla, Wash.

150 tons, building, Philadelphia Transit Co., Fern Rock, Pa., to Easton Steel Structurals, Easton, Pa.

145 tons, state bridgework, Rockland and Westchester counties, N. Y., to Long Island Beam Co.

105 tons, lintels, Commodore Perry houses, Buffalo, through John A. Johnson & Sons Co., to Bethlehem Steel Co., Bethlehem, Pa.

STRUCTURAL STEEL PENDING

12,785 tons, bridge superstructure, Rappahannock river, Greys Point, Va., Bethlehem Steel Co., Bethlehem, Pa., low, $7,948,106; American Bridge division, U. S. Steel Corp., Roanoke, Va., $8,106,560.

800 tons, hanger, naval air station, Brunswick, Me.; bids in.

550 tons, section, Queens Midtown expressway, Triborough Bridge Authority, New York, Slattery Contracting Co., Queens, New York, and other interests are low jointly on general contract.

550 tons, state bridge work, Prince Georges county, Md.; bids closed Oct. 26.

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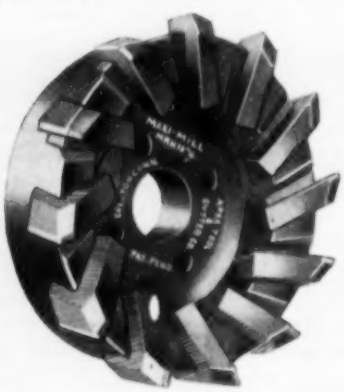

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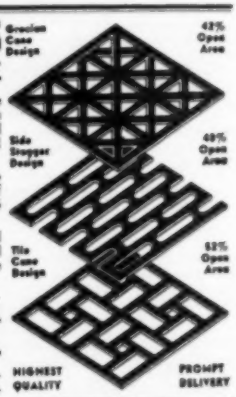

The "Ornamental" light-gauge designs here illustrated are only a few of the many you can choose from in our new Catalog 39 and we are always pleased to quote on original designs or special work of any kind.

For larger unit-openings, using metals up to ¼" in thickness, we offer a wide variety of equally attractive designs in our Catalog 36 on Diamond Architectural Grilles.

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500 tons, school, State School Authority, Connellsville, Pa.; bids Nov. 9.

500 tons, shapes and bars, junior high school, Springfield, Vt.; bids Nov. 19.

337 tons, state turnpike, Carbon county, Pa.; bids Nov. 3.

300 tons, State School Authority, Rostraver, Pa.; bids closed Oct. 28.

125 tons, including reinforcing, Mesa pumping station, Columbia Basin project; Buchanan, Sather & DeRycke, Seattle, low $167,777 to Bureau of Reclamation, Ephrata, Wash.

REINFORCING BARS . . .

REINFORCING BARS PENDING

1800 tons, Hampton Roads tunnel, Virginia, contract C-1; Merritt-Chapman & Scott Corp., New York, low, general contract.

1360 tons, approaches, Hampton Roads tunnel, Virginia, contract C-2 and C-2, alternate two, except for pre-stressed concrete beams, 896 beams, 50-ft each, and 261 beams 80-ft each; Merritt-Chapman & Scott Corp., New York, low, general contract.

1200 tons, barracks construction, Ft. Lewis, Wash.; bids in.

850 tons, materials warehouse, Seattle; general award to Leavitt, Chandler & Co., Kirkland, Wash., by Boeing Airplane Co., Seattle.

725 tons, bridge superstructure, Rappahannock river, Greys Point, Va., Bethlehem Steel Co., Bethlehem, Pa. low, 16.00c per pound in place; American Bridge Division, U. S. Steel Corp., Roanoke, Va., 17.00c in place.

600 tons, First Ave. So. state bridge, Seattle, general contract to Peter Kiewit Sons Co., Seattle, low $665,982.

200 tons, canal, Yakima project, near Prosser, Wash.; bids to chief engineer, Bureau of Reclamation, Denver.

160 tons, state overcrossing, Skagit county, Washington; bids to Olympia, Wash., Nov. 4.

100 tons, girder and slab, state road bridges, Snohomish and Spokane counties, Wash.; general contracts to Odegard Construction Co., Everett, Wash., $42,869, and Henry Hagman, Spokane, Wash., $38,973.

100 tons plus, two 4-story dormitories, Seattle University, Seattle; bids to Very Rev. A. A. Lemieux, Nov. 10; John W. Maloney, Seattle, architect.

94 tons, utilidors, Ladd Air Base, Alaska; Peter Kiewit Sons Co., Longview, Wash., low $464,543.

PLATES . . .

PLATES PLACED

1465 tons, tanks, Groton, Conn., to Bethlehem Steel Co., Bethlehem, Pa., through Roy M. Henwood Associates, New York.

355 tons, tank, Sinclair Refining Co., Baltimore, to Chicago Bridge & Iron Co., Chicago.

200 tons, 72-in. pipe, highway development, Kings county, N. Y., through Brookfield Construction Co. to the Bethlehem Steel Co., Bethlehem, Pa.

PLATES PENDING

1600 tons, penstocks, etc., California-Oregon Power Co. project; bids in at Medford, Oreg., Oct. 25.

900 tons, 30 and 36-in. diameter steel pipe, water system, Worcester, Mass.

PIPE . . .

CAST IRON PIPE PLACED

220 tons, Eugene, Oreg., project; to Pacific States Cast Iron Pipe Co., Portland, Oreg.

100 tons, 6-in., system expansion, Dalles, Oreg., to U. S. Pipe & Foundry Co., Seattle.

STEEL PIPE PENDING

500 tons, Fairbanks, Alaska, major expansion; general contract to Peter Kiewit Sons Co., Longview, Wash.

RAILS, CARS . . .

RAILROAD CARS PLACED

Canadian National Railways, 3 self-propelled rail diesel cars, to Budd Co., Philadelphia.

Pennsylvania, 200 seventy-ton special flat cars for piggy-back service, to Bethlehem Steel Co., Bethlehem, Pa.

Ores

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail or vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%	20.66
N. African hematite (spot)	nom. 20.00-22.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, before duty

Foreign Wolframite, good commercial quality	$24.00-25.00
Domestic scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, 90c-92c per long ton unit c.i.f. U. S. ports, duty for buyer's account: 46-47%, 80c.

Chrome Ore

Gross ton f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	nom. $40.00-$42.00
48% 3:1	42.00-44.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$19.00-$20.00
48% no ratio	31.00-32.00

Domestic

(Rail nearest seller)

18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb, Mo content mines unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

50-60%	$3.50-$3.90
60-65%	4.10-4.50

Vanadium Ore

Cents per lb V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Pueblo, Colo., $94; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $114; Salina, Pa., $119; Niles O., $125; Los Angeles, Pittsburg, Calif., $137.20.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $120; Warren, Niles, O., Hays, Pa., $125; Morrisville, Pa., $123.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $130; Cutler, Utah, $121.55; Los Angeles, $127.85.

Super Duty: Hays, Sproul, Pa., Warren, Windham, O., Athens, Tex., $137; Morrisville, Pa., $140; Joliet, Ill., $143.

Semisilica Brick (per 1000)

Clearfield, Pa., $130.

Insulating Fire Brick (per 1000)

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala. $212.80.

Ladle Brick (per 1000)

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $77.50; Wellsville, O., $81.50; Clearfield, Pa., Portsmouth, O., $87; Peria, Ark. $109; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

High-Alumina Brick (per 1000)

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $181; Danville, Ill., $169.30.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $225; Danville, Ill., $213.20.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $260; Danville, Ill., $258; Clearfield, Pa., $267.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $147; Clearfield, Pa., $148.50; St. Louis, $159.30; Athens, Tex., $155.

Nozzles (per 1000)

Reesdale, Pa., $234.70; Johnstown, Pa., $240.70; Clearfield, Pa., $241.40; St. Louis, $259.45; Athens, Tex., $247.70; Bridgeburg, Pa., $267.50.

Runners (per 1000)

Reesdale, Pa., $183.50; Johnstown, Bridgeburg, Pa., $183.50; Clearfield, Pa., $185.50; St. Louis, $195.80; Athens, Tex., $191.80.

Dolomite (per net ton)

Domestic dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $15.10; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite (per net ton)

Domestic, deadburned bulk, ¼-in. grains with fines: Luning, Nev., Chewelah, Wash., $38.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$13.50-$14.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearny, N. J., ovens	$24.00
Everett, Mass., ovens	
New England, deld.	*26.05
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.00
Swedeland, Pa., ovens	23.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, O., deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	46.00
Toluol, one deg	32.00-35.00
Industrial xylol	32.00-35.00

Per ton, bulk, ovens

Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $35-$36; 70%, $32-$33; 60%, $28-$29. Imported, net ton, duty paid, metallurgical grade: European, $28-$30; Mexican, $25.50.

Electrodes

(Threaded with nipple, unboxed f.o.b. plant)

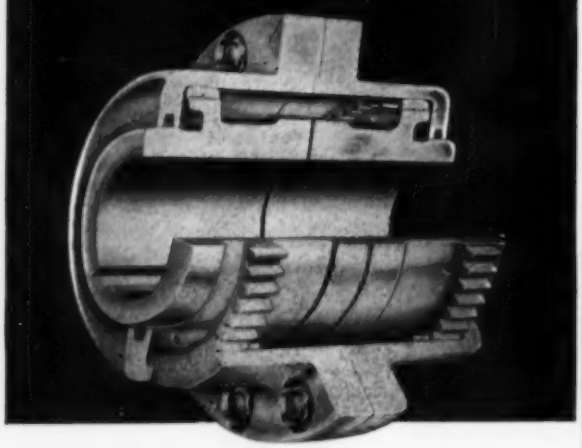
GRAPHITE

Diam. (Inches)	Length	Per 100 lb
2	24	$43.50
2½	30	28.00
3	40	27.25
4	40	26.00
5¼	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.00
20	72	20.00

CARBON

40	100	$8.95
40, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72, 84	9.10
20	90	8.95
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12, 10	60	10.30
8	60	10.55

POOLE



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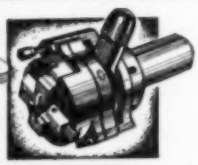

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Scrap . . .

Scrap Prices, Page 142

Philadelphia—Based on further domestic buying, No. 1 heavy melting steel and No. 1 bundles have advanced to $32.50 delivered, and No. 2 heavy melting and No. 2 bundles to $30.50 and $27.50, respectively. This represents an advance of $1 in each case. Also up $1 are machine shop turnings, holding at $18.50, delivered.

Other grades reported up are low phos structural and plates, and couplers, springs and wheels, to a spread of $34 to $35, delivered, and heavy breakable cast to a range of $36 to $36.50. Rail crop prices are strong but untested.

Pittsburgh—No local sales are reported at higher than $33 a ton for No. 1 heavy melting scrap, although special high-quality lots command a $1 or $2 premium. Over-all production at Pittsburgh steel mills is not high enough to generate a rising market for No. 1 heavy melting.

A sale of machine shop turnings and short shovel turnings pushed prices $1 higher than they were last week. Railroad scrap also increased slightly. Cast iron grades remain dull.

New York — Scrap brokers are paying $27 to $28 for No. 1 heavy melting steel and No. 1 bundles, $25 to $26 for No. 2 heavy melting and $21 to $22 for No. 2 bundles. Unstripped motor blocks are higher at $23 to $24. The market reflects particular strength in foreign demand.

Buffalo—Although no new business was reported last week in this market at the recently advanced prices, scrap shows decidedly stronger tendencies and further increases are anticipated. A sharp rise of 12 points in the steel production rate bolstered the market, and dealers are expecting a leading mill to boost its scrap buying price this week. Two blast furnaces were returned to production as the scrap market stiffened.

Cleveland — Rising district steelmaking operations provide strong support for bullish sentiment in the local scrap market. Last week the area ingot rate went up 5.5 points to 87 per cent of capacity, highest since December of last year. Scrap dealers and brokers are encouraged even though mill buying has not assumed large proportions. For the moment, prices are unchanged except for blast furnace grades which are up $1.

Cincinnati—Recent purchases have pushed up prices on mixed borings and turnings and cast iron borings to a range of $17 to $18.

Detroit—A strong undertone prevails in the scrap market here, but prices on steelmaking grades hold unchanged.

Chicago—Two important grades of steelmaking scrap slipped $1 per ton last week because of consumer pressure; the whole price structure appeared a little less solid than it has during preceding weeks. Grades affected were No. 2 heavy melting and No. 1 railroad heavy melting.

St. Louis — Scrap continues firm with prices unchanged. Mills are buying a little more tonnage, keeping step with rising steelmaking.

Birmingham—Additional moderate increases in scrap prices reflect continued activity in the export market, especially through Carolina ports.

Los Angeles—Although mills are showing renewed interest in specifications, buying of steelmaking scrap continues to lag.

San Francisco—A tight market has developed in steel scrap in this area. Rising export demand at prices above the local level and higher than prevalent rates both in Los Angeles and Seattle is the chief factor for strength.

Seattle — Scrap market continues steady. Prices are unchanged, $25 and $21 being quoted on No. 1 and No. 2 heavy melting steel.

Pig Iron . . .

Pig Iron Prices, Page 129

Foundry melt is maintaining its upward trend. It is stimulated chiefly by rising automotive requirements for castings.

Some pig iron buying is for replenishment of inventories. A further increase in demand is anticipated for November, although the gain may be slight.

Supply of pig iron is more than ample to supply all needs, so purchasing is of spot or near-term character.

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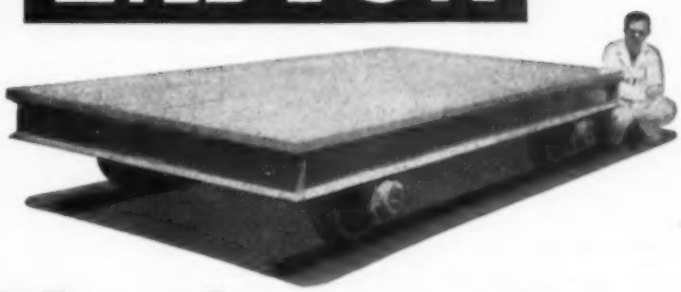

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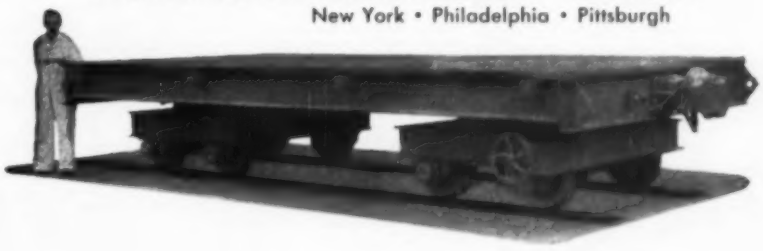

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Oct. 27	$32.67
Oct. 20	32.33
Sept. Avg.	29.94
Oct., 1953	32.75
Oct. 1949	26.71

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	29.00-30.00
No. 1 bundles	32.00-33.00
No. 2 bundles	26.00-27.00
No. 1 busheling	31.00-32.00
Machine shop turnings	*19.00-20.00*
Mixed borings, turnings	*19.00-20.00*
Short shovel turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Cut structurals, 5 ft lengths	33.00-34.00
Heavy turnings	30.00-31.00
Punchings & plate scrap	36.00-37.00
Electric furnace bundles	34.00-35.00

Cast Iron Grades

No. 1 cupola	37.00-38.00
Charging box cast	32.00-33.00
Heavy breakable cast	31.00-32.00
Unstripped motor blocks	23.00-24.00
No. 1 machinery cast	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt	*36.00-37.00*
Rails, 2-ft and under	44.00-45.00
Rails, 18-in. and under	45.00-46.00
Rails, random lengths	38.00-39.00
Railroad specialties	*37.50-38.50*

Stainless Steel Scrap

18-8 bundles & solids	180.00-190.00
18-8 turnings	85.00-90.00
430 bundles & solids	65.00-70.00
430 turnings	50.00-52.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	30.00-31.00
No. 1 bundles	32.00-33.00
No. 2 bundles	26.00-27.00
No. 1 busheling	32.00-33.00
Machine shop turnings	*16.00-17.00*
Mixed borings, turnings	*20.00-21.00*
Short shovel turnings	*20.00-21.00*
Cast iron borings	*20.00-21.00*
Low phos.	34.00-35.00
Cut structural plate 2 ft and under	*38.00-39.00*
Alloy free, short shovel turnings	*23.00-24.00*
Electric furnace bundles	*34.00-35.00*

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	33.00-34.00
Stove plate	38.00-39.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	30.00-31.00
Brake shoes	31.00-32.00
Clean auto cast	44.00-45.00
No. 1 wheels	37.00-38.00
Burnt cast	29.00-30.00
Drop broken machinery	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt	35.00-36.00
R.R. malleable	44.00-45.00
Rails, 3-ft and under	46.00-47.00
Rails, 18 in. and under	48.00-49.00
Rails, random lengths	43.00-44.00
Cast steel	36.00-37.00
Railroad specialties	36.00-37.00
Uncut tires	37.00-38.00
Angles, splice bars	43.00-44.00
Rails, rerolling	56.00-58.00

Stainless Steel

(F.o.b. shipping point)

18-8 bundles, solids	170.00-180.00
18-8 turnings	70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	30.00-31.00
No. 1 bundles	35.00-36.00
No. 2 bundles	27.00-28.00
Machine shop turnings	14.00-15.00
Short shovel turnings	*22.00-23.00*
Cast iron borings	*22.00-23.00*
Low phos.	*36.00-37.00*
Electric furnace bundles	*36.00-37.00*

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00

CHICAGO

No. 1 heavy melting	32.00-34.00
No. 2 heavy melting	*30.00-31.00*
No. 1 factory bundles	34.00-35.00
No. 1 dealer bundles	33.00-34.00
No. 2 bundles	23.50-24.50
No. 1 busheling	32.00-34.00
Machine shop turnings	17.00-18.00
Mixed borings, turnings	19.00-20.00
Short shovel turnings	19.00-20.00
Cast iron borings	19.00-20.00
Cut structurals, 3-ft	35.00-36.00
Punchings & plate scrap	35.00-36.00
Electric furnace bundles	34.00-35.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Stove plate	33.00-34.00
Unstripped motor blocks	25.00-26.00
Clean auto cast	43.00-45.00
Drop broken machinery	43.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt	*35.00-36.00*
R.R. malleable	42.00-44.00
Rails, 2-ft and under	50.00-51.00
Rails, 18-in. and under	51.00-52.00
Angles, splice bars	43.00-44.00
Rails, rerolling	*54.00-55.00*

Stainless Steel Scrap

18-8 clips & solids	130.00-140.00
18-8 turnings	60.00
430 clips & solids	40.00
430 turnings	20.00-25.00

Chicago Mercantile Exchange

No. 1 Heavy Melting
(Week ended Oct. 27)

High	Low	Close
Jan.		37.00*
Mar.		37.00*

Sales (40-ton units): None.

* Nominal

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	25.00
No. 2 heavy melting	21.50
No. 1 bundles	27.50
No. 2 bundles	20.00
No. 1 busheling	26.00
Machine shop turnings	12.00
Mixed borings, turnings	12.00
Short shovel turnings	16.00
Punchings & plate scrap	27.00

Cast Iron Grades

No. 1 cupola	34.00
Charging box cast	27.00
Stove plate	30.00
Heavy breakable	25.00
Unstripped motor blocks	20.00
Clean auto cast	38.00
Malleable	30.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	26.00-27.00
No. 1 bundles	29.00-30.00
No. 2 bundles	20.50-21.50
No. 1 busheling	29.00-30.00
Machine shop turnings	15.50-16.50
Mixed borings, turnings	*17.00-18.00*
Short shovel turnings	17.00-18.00
Cast iron borings	*17.00-18.00*
Low phos. 18-in.	34.00-35.00

Cast Iron Grades

No. 1 cupola	39.00
Heavy breakable cast	36.00
Charging box cast	36.00
Drop broken machinery	45.00

Railroad Scrap

No. 1 R.R. heavy melt	32.00-33.00
Rails, 18-in. and under	46.00-47.00
Rails, random lengths	38.00-39.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*32.50*
No. 2 heavy melting	*30.50*
No. 1 bundles	*32.50*
No. 2 bundles	*27.50*
No. 1 busheling	28.50-29.00*
Electric furnace bundles	32.50
Machine shop turnings	*18.50*
Mixed borings, turnings	19.00
Short shovel turnings	20.00-21.00
Structurals & plate	*34.00-35.00*
Heavy turnings	29.00
Couplers, springs, wheels	34.00
Rails crops, 2 ft & under	45.00

Cast Iron Grades

No. 1 cupola	35.00-36.00
Malleable	37.00*
Heavy breakable cast	*36.00-36.50*
Drop broken machinery	42.00-43.00

*Nominal.

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*27.00-28.00*
No. 2 heavy melting	*25.00-26.00*
No. 1 bundles	*27.00-28.00*
No. 2 bundles	*21.00-22.00*
Machine shop turnings	9.00-10.00
Mixed borings, short turnings	11.00-12.00
Low phos. (structural & plate)	29.00-30.00
Short shovel turnings	12.00-13.00

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstripped motor blocks	*23.00-24.00*

Stainless Steel

18-8 sheets, clips, solids	170.00-175.00
18-8 borings, turnings	70.00-75.00
430 sheets, clips, solids	40.00
410 sheets, clips, solids	30.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	22.00-23.00*
No. 2 heavy melting	17.25-18.25
No. 1 bundles	23.00-24.00
No. 2 bundles	16.00-17.00
Mixed borings, turnings	10.00-10.50
Machine shop turnings	8.50-9.00
Short shovel turnings	11.50-12.00
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	32.00-33.00

* $4 to $4.50 higher for export.

BUFFALO

No. 1 heavy melting	30.00-31.00
No. 2 heavy melting	26.50-27.50
No. 1 bundles	30.00-31.00
No. 2 bundles	24.50-25.50
No. 1 busheling	30.00-31.00
Machine shop turnings	15.50-16.50
Mixed borings, turnings	17.50-18.00
Short shovel turnings	18.50-19.00
Cast iron borings	17.50-18.00
Low phos.	*33.00-34.00*

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	*38.00-39.00*
No. 1 machinery	*43.00-44.00*

Railroad Scrap

Rails, random lengths	35.00-36.00
Rails, 3 ft and under	42.00-43.00
Railroad specialties	36.50-37.50

BIRMINGHAM

No. 1 heavy melting	24.00-27.00
No. 2 heavy melting	24.00-25.00
No. 1 bundles	23.00-24.00
No. 2 bundles	19.00-20.00
Cast iron borings	16.00-17.00
Short shovel turnings	16.00-17.00
Machine shop turnings	15.00-16.00
Electric furnace bundles	29.00-30.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	45.00-46.00
Stove plate	42.00-43.00
Bar crops and plate	*33.00-34.00*
Structural plate, 2 ft	*33.00-34.00*
Unstripped motor blocks	35.00-36.00

Railroad Scrap

No. 1 R.R. heavy melt.	30.00-31.00
Rails, 18-in. and under	40.00-41.00
Rails, rerolling	40.00-41.00
Angles, splice bars	38.00-39.00
Stand. steel axles	35.00-36.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	30.00
No. 2 heavy melting	28.00
No. 1 bundles	30.00
No. 2 bundles	23.50
Machine shops turnings	14.00
Short shovel turnings	16.00

Cast Iron Grades

No. 1 cupola	38.00
Charging box cast	29.00
Heavy breakable cast	29.00
Unstripped motor blocks	29.00
Brake shoes	30.00
Clean auto cast	41.00
Stove plate	*35.00*

Railroad Scrap

No. 1 R.R. heavy melt	35.00
Rails, 18-in. and under	46.00
Rails, random lengths	*45.00-48.00*
Rails, rerolling	53.50
Angles, splice bars	44.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	25.00
No. 2 heavy melting	21.00
No. 1 bundles	21.00
No. 2 bundles	17.00
No. 3 bundles	13.00
Machine shop turnings	12.00
Mixed borings, turnings	12.00
Short shovel turnings	12.00
Electric furnace, No. 1	32.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	32.00-35.00
Heavy breakable cast	23.00
Unstripped motor blocks	23.00
No. 1 wheels	21.00
Stove plate(f.o.b. plant)	28.00
Brake shoes	28.00

Railroad Scrap
(Delivered consumer plant)

Rails, random lengths	30.00-34.00

LOS ANGELES

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	20.00
No. 2 bundles	16.00
Machine shop turnings	5.00

Cast Iron Grades
(F.o.b. shipping point)

No. 1 cupola	42.00-44.00

SAN FRANCISCO

No. 1 heavy melting	20.00
No. 2 heavy melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 1 busheling	20.00
Machine shop turnings	5.00
Mixed borings, turnings	5.00
Short shovel turnings	9.00
Cast iron borings	9.00
Cut structurals	25.00
Heavy turnings	9.00
Punchings & plate scrap	25.00
Electric furnace bundles	19.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

HAMILTON, ONT.

(Delivered prices)

No. 1 heavy melting	$22.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	17.00
Mixed steel scrap	16.00
Mixed borings, turnings	12.00
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Unprepared	16.00
Short steel turnings	12.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.

GREAT MOMENTS IN THE HISTORY OF IRON AND STEEL MAKING

1761

Christopher Polhem

An Early 19th Century Mill *. . . This is the fourth in a series of outstanding inventions and developments that have contributed to the progress of the iron and steel industry.*

The Principle of the four-high Mill

While the four-high broad strip mill, as we know it today, is a comparatively recent development, the principle of the mill is based on the first installation made in 1761 by Christopher Polhem, "the father of Swedish mechanics."

Polhem believed that greater reductions in strips were possible with rolls of a small diameter. However, he had to contend with considerable variations in the thickness due to the deflection of the rolls. This, he solved by re-inforcing the small working rolls with rolls of a larger diameter, placing one directly under the bottom working roll and one directly over the top roll. In effect, one roll backed up the other.

Through the years, engineering skill has improved the process to meet modern industrial demands. Keeping pace with this technological progress is the development in the fields requiring special steels.

These special steels require special scrap of known analysis, a problem particularly suited to our experience, personnel, equipment and the strategic locations of our offices. Possibly our facilities may help you solve a problem in iron or steel scrap.

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Steel company reports that LATTICE BRAID* Flax Packings last *3 times longer* than ordinary flax packings

*Registered Trademark. Only Garlock makes LATTICE BRAID rod and shaft packings.

Dominion Iron & Steel Co. Ltd. of Sydney, Nova Scotia installed our LATTICE BRAID Flax packing on the hydraulic cylinders of their open hearth mills. Dominion's master mechanic stated that LATTICE BRAID lasted three to four times *longer* than any other flax packing his company had used. In addition, he said LATTICE BRAID does not score the ram. Now, Dominion is so well satisfied with this packing that they are ordering LATTICE BRAID Packings for other applications.

Put Garlock LATTICE BRAID Packing to work for your company. All the braided strands of this unique packing are lattice linked together into one structural unit. The strands hold together even when the packing is worn far beyond the limits of wear of ordinary braided packings.

LATTICE BRAID is made from flax, cotton, asbestos, wire-inserted asbestos, Teflon, and asbestos with Teflon impregnation—for various types of services.

Get all the facts about LATTICE BRAID *Packings. Contact your Garlock representative or write for new folder AD-131.*

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK

Sales Offices and Warehouses: Baltimore • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland Denver • Detroit • Houston • Los Angeles • New Orleans • New York City • Palmyra (N.Y.) • Philadelphia Pittsburgh • Portland (Oregon) • Salt Lake City • San Francisco • St. Louis • Seattle • Spokane • Tulsa.

In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.

GARLOCK LATTICE BRAID PACKING

Tin Plate . . .

Tin Plate Prices, Page 126

Shipments of metal cans in August totaled 523,140 tons, 28 per cent of July shipments of 407,615 tons, reports the Census Bureau. Total for the first eight months of this year was 2,769,136 tons, against 2,721,965 in the like period of 1953.

Fruit and vegetable can shipments amounted to 860,067 tons in the first eight months. This compares with 876,006 in the corresponding period of last year. Shipments of beer cans, second largest classification, totaled 465,851 tons. In the same period last year shipments were 432,043 tons.

For the first time, the Bureau presented separate data for soft drink containers, the August total being 5584 tons.

Youngstown Sheet & Tube Co. plans installation of a third tinning line at its Indiana Harbor, Ind. works.

Tubular Goods . . .

Tubular Goods Prices, Page 128

Oil country demand for alloy tubular goods continues strong, but increasing competition for orders is noted in the carbon grades. Order backlogs are reported shrinking gradually in both classifications.

Seamless specialties are chalking up moderate sales increases, but the over-all market remains dull. Continuing high rate of construction assures a strong market for standard pipe used in building.

Rising demand for steel products in general is delaying delivery of skelp to the tube mills in some cases.

Jones & Laughlin Steel Corp. plans additional pipe facilities at Aliquippa, Pa., in its 1955 expansion program. Facilities will be installed for production of high strength and special seamless tube products for the oil industry. An electricweld pipe mill is planned to produce oil country pipe.

Rails, Cars . . .

Track Material Prices, Page 127

Domestic freight car orders, as of Oct. 1, totaled 11,993 cars, compared with 13,013 ordered a month previously, reports the American Railway Car Institute and the Association of American Railroads in a joint statement. In September 2396 freight cars were ordered. Deliveries amounted to 2566 cars, against 2297 in August.

Missouri - Kansas - Texas railroad contracted with the Bessemer, Ala., plant of the Pullman-Standard Car Mfg. Co. for 500 box cars to cost $3 million.

ADDITIONAL LINES WANTED

We are two energetic, experienced salesmen looking for additional lines to sell on a commission basis, in Milwaukee and Wisconsin area. Prefer industrial lines, but will consider others.

Reply Box 147, STEEL
Penton Building Cleveland 13, Ohio

CLASSIFIED

Help Wanted

SALES REPRESENTATIVE by Midwest Steel Manufacturer—earnings $10,000.00 to $15,000.00 or more—Protected territory. Qualifications: Mechanical or Metallurgical Engineering and/or shop experience. Write fully. Reply Box 132, STEEL, Penton Building, Cleveland 13, Ohio.

FORGE SHOP FOREMAN by Eastern manufacturer of small and medium sized quality drop forgings. Must be thoroughly experienced in the forging field particularly in the use and maintenance of board drop hammers. Applications treated strictly confidentially. Should include experience, age and salary expected. Apply Box 154, STEEL, Penton Building, Cleveland 13, Ohio.

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Chicago firm desires FACTORY REPRESENTATIVE to call on Steel Warehouses, Steel Erectors, Contractors and Industrials using Wire Rope Slings. Liberal commissions. Reply Box 153, STEEL, Penton Building, Cleveland 13, Ohio.

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PLANT AND PRODUCTION MANAGER, Engineering Graduate (M.I.T.) indoctrinated in practical operating experience. Proven record of accomplishment in efficient plant supervision, control, and cost reduction coupled with amicable labor relations. Reply Box 134, STEEL, Penton Building, Cleveland 13, Ohio.

ESTIMATOR AND CONTRACT MANAGER. Graduate structural engineer. 26 years experience in estimating, sales, and management of structural steel and plate fabrication. Reply Box 142, STEEL, Penton Building, Cleveland 13, Ohio.

EXPERIENCED FORGING ENGINEER AVAILABLE. Expert in hand tools and railroad work, production, design and management. Willing to travel. Passport in order. Reply Box 145, STEEL, Penton Building, Cleveland 13, Ohio.

SEASONED EXECUTIVE
With Strong Background

PRODUCTION, PLANT ENG., TOOL ENG. Desires broader opportunity. Functions well at policy level. Presently master mechanic of $3,000,000 stamping and assembly manufacturing company. Reply Box 149, STEEL, Penton Building, Cleveland 13, Ohio.

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Desires change. Twenty-five years experience in sheet metal stampings and related assemblies. Specialized in progressive and deep draw dies. Good organizer, functions well at top level. Reply Box 150, STEEL, Penton Building, Cleveland 13, Ohio.

Employment Service

SALARIED POSITIONS $5,000 to $35,000. We offer the original personal employment service (established 44 years). Procedure of highest ethical standards is individualized to your personal requirements identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC., 665 Brisbane Bldg., Buffalo 3, N.Y.

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built to your specifications

Take advantage of our more than 40 years' experience in manufacturing and re-building industrial transformers. Complete satisfaction guaranteed.

Send us your specifications for prompt quotation

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Manufactured - Bought - Sold - Repaired

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10 to 12 ft. lengths
ALL METALS
Also Screw Machine Products to Order
EASTERN
Machine Screw Corp.
New Haven, Conn.
Makers of H & G Die Heads

DESIGN AND SALES ENGINEERS

Internationally known manufacturer of machine tools located in Chicago has excellent opportunities for design engineers and sales engineers with experience on pneumo hydraulic boosters, accumulators, solenoid air and hydraulic valves. Good starting salary and future. Send resume of education and experience.

Box 146, STEEL, Penton Bldg., Cleve., O.

EXPERIENCED STEEL MEN WANTED

CHIEF ENGINEER
MASTER MECHANIC
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Excellent opportunities with a small steel plant in Middle West, specializing in electric furnace production and rolling of high quality killed carbon and alloy steels.

Apply by letter stating complete qualifications and salary expected. All communications will be held in strictest confidence.

Reply Box 152, STEEL
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RAILWAY EQUIPMENT
FOR SALE
Used — As Is — Reconditioned

RAILWAY CARS—
ALL TYPES
"SERVICE-TESTED"
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WANTED
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or termination inventories
Get our cash offer by return mail.
Send lists to:
COLLINS ENGINEERING COMPANY
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WANTED
Used steel structure for relocation
AREA: 30,000 SQ. FT.

In reply give full particulars including dimensions, weight, ceiling height and price. Write to:

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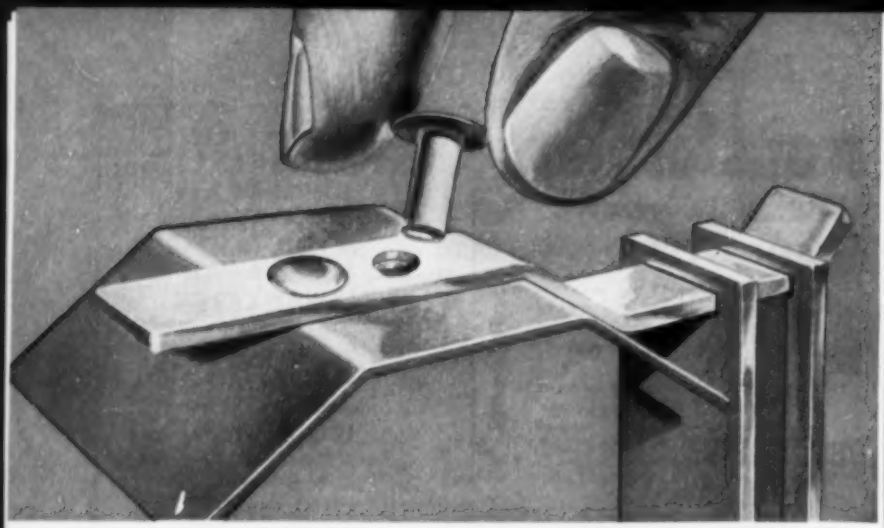

You Enjoy The Economy Of Quality With Townsend Tubular Rivets

If you use tubular rivets in your assembly operations you know that uniform physical properties and accurate dimensions are essential to efficient operation. We, at Townsend, know it too. That is why wire of the proper grade and analysis is drawn to specifications in our own wire mill to assure positive control of the quality you enjoy when using Townsend tubular rivets.

Since tubular rivets are set with comparatively little pressure, they are often used in materials which cannot stand the impact required to set solid rivets. In these cases the uniform ductility of Townsend tubular rivets is doubly important.

Townsend tubular rivets feed readily into any make of automatic machine—may also be set easily by hand. Their appearance is good—adds to the attractiveness of your product. They weigh less than many other types of fasteners—reduce product weight.

The majority of Townsend semi-tubular rivets are made with an extruded hole which is tapered. When set, there is more material in the clinched end which produces great holding power and develops a shear strength comparable to other fasteners.

Townsend tubular rivets are used extensively in the electrical industry for assembling radio and television sets—in the automotive industry to assure safe, positive fastening of lining to brake shoes—in the furniture industry and many others where quick, secure, economical assembly is desired. These rivets are available in a wide range of sizes in steel, brass, aluminum and copper.

In addition to being the world's largest manufacturer of a complete line of rivets, Townsend has become known as "The Fastening Authority"—has developed special skills and accumulated experience in assembling products of metal, wood, plastics, fabrics and glass. This knowledge enables Townsend engineers to help select or design the fastener best suited to your product and assembly methods. They have over 10,000 special and standard items to draw upon. Also, Townsend's tremendous capacity of 60-million pieces daily is your assurance that delivery will keep pace with your production. You can depend upon Townsend as a reliable source of quality fasteners at a reasonable cost. To enjoy the economy of quality—specify Townsend fasteners.

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

THE FASTENING AUTHORITY—Experience: *over 138 years*—**Capacity:** *sixty-million parts daily*—**Products:** *over ten-thousand types of solid rivets–cold-headed parts–Cherry Blind Rivets–Twinfast Screws – self-tapping screws – tubular rivets – locknuts – special nails – formed wire parts.*

Plants: *New Brighton, Pa.—Chicago, Ill.—Plymouth, Mich.—Santa Ana, Calif.*

In Canada: *Parmenter & Bulloch Manufacturing Company, Ltd., Gananoque, Ontario*

Tool Steel . . .

Tool Steel Prices, Page 128

Carboloy Department, General Electric Co., Detroit, announces a price revision, including: A 6 per cent average increase on its standard tools, standard blanks and special blanks; a price decrease on large carbide pieces for die applications, effective Nov. 1.

Warehouse . . .

Warehouse Prices, Page 129

Distributors are enjoying somewhat better volume. The improvement in business is spotty, some warehouses reporting a substantial rise in orders, while others note only a slight gain.

Inquiry is more diversified, hinting that excessive inventories in the hands of consumers have been reduced to normal levels. The gain in bookings so far has been confined mostly to flat-rolled and bars.

Competition with mills, as well as among distributors, is keen. Revised extras schedule on hot-rolled carbon and alloy bars issued by a leading producer is on a percentage basis and brings the mill price on small lots (6000 lb and less) close to the warehouse price. For instance, the extra on 4000 to 6000 lb is 145 per cent of net price base; as quantity declines, the percentage of extra increases to 155 per cent net base. This move was made to discourage placement of smaller orders directly with mills, a practice that has been growing in the last year or so.

Iron Ore . . .

Iron Ore Prices, Page 130

Expectations are that iron ore movement down the Great Lakes in the 1954 shipping season will run to only a little more than 60 million gross tons. Last year nearly 96 million tons were moved.

Lake ore shipments in the latest week of record (ended Oct. 25) were 1,750,252 gross tons, compared with 2,505,525 in the like week of the 1953 navigation season. Cumulative shipments in the season to Oct. 25 are 56,427,582 tons. The total is almost 32 million tons under last year's movement in the comparable period.

Lake shipping season will close earlier than usual for most vessel operators. Pittsburgh Steamship Division, U. S. Steel Corp., is planning to decommission its vessels about mid-November.

Iron ore production at the new mines of the Bethlehem Steel Co., Morgantown, Pa., will begin late in 1957.

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A NAGGING WIFE MAY SAVE YOUR LIFE

IF YOU ARE OVER 45 and your wife keeps insisting that you should have *two* chest x-rays every year... don't blame her. *Thank* her! Semi-annual chest x-rays are the best "insurance" you can have against death from lung cancer.

The cold fact is that lung cancer has increased so alarmingly that today you are six times more likely to develop lung cancer than a man of your age 20 years ago. Our doctors know that their chances of saving your life could be as much as ten times greater if they could only detect lung cancer before it "talks"... before you notice any symptom in yourself. That's why we urge you to make semi-annual chest x-rays a habit—for *life*.

To see our new life-saving film "The Warning Shadow" call the American Cancer Society office nearest you or simply write to "Cancer" in care of your local Post Office.

American Cancer Society

Tool Steel Topics

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Keen Edges Hold on Blades of Lehigh H and L

The shear blades shown here are representative of the blades used in pairs in power squaring shears manufactured by Wysong & Miles Company, Greensboro, N. C. The blades are hollow ground, and are made of either Bethlehem Lehigh H or Lehigh L tool steel. They perform economically at speeds up to 60 strokes per minute because they hold their cutting edges for long periods of time, in this way minimizing the need for frequent regrinding.

Lehigh H and Lehigh L are high-carbon, high-chromium tool steels. They form high-chromium carbide concentrations, meaning the ultimate in wear. With its lower carbon content and addition of 1.00 pct nickel, Lehigh L has unusual toughness. It is used for shearing thicker material where shock is involved.

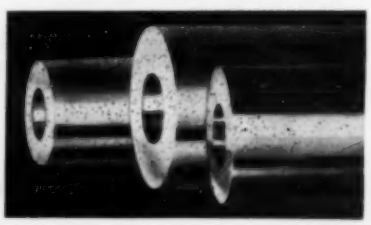
TYPICAL ANALYSES

	C	Cr	Mo	V	Ni
Lehigh H	1.55	11.50	0.80	0.40	—
Lehigh L	0.85	11.50	0.45	0.30	1.00

You can count on good wear-resistance with Lehigh H or Lehigh L. If you would like to have more information about these steels and their use, we suggest that you contact your tool steel distributor, or write direct to us at Bethlehem, Pa.

HOLLOW-BAR TOOL STEEL IS IDEAL FOR RING-TYPE APPLICATIONS

BTR (Bethlehem Tool Room) Hollow-Bar is an excellent steel for hardened bushings, ring dies, draw rings and similar uses *(above)*. It is produced by high-speed trepanning, in which hammer-forged or hot-rolled round bars *(below)* are cored out, followed by rough turning on the outside. Hollow-Bar saves production time, for there's no need to wait for forged rings or discs. Quick delivery, too, for rings can be cut to any length.



BETHLEHEM TOOL STEEL ENGINEER SAYS:

First Harden the Die, Then the Punch

In making up special punch-and-die sets, the fitting of the punch and die after hardening often involves hand grinding or stoning to remove the size changes produced during the hardening operation. The hole in the die will often close in, while the punch will usually expand in diameter. Thus the two parts will not fit, or will lose clearance.

In order to minimize such difficulties, and to reduce tool costs, the use of the following procedure is recommended:

1. Make up the die, and harden it. 2. Make up the soft punch, and fit it to the die. 3. Harden punch. 4. If necessary, fit punch to die by grinding.

In this way, only one of the two parts is ground in the hardened condition, and the grinding is external and easier than internal grinding. To avoid excessive grinding, it may occasionally be advisable to allow for size-change in the die. But in the main this procedure can bring worthwhile economies.

● In 42 years of exclusive worm gear manufacture, including hob making experience, Cleveland has developed its engineering and production facilities to establish accurate duplication of parts as standard practice.

Photo shows typical hob and gear setup in a hobbing machine.

CLEVELANDS save you money on replacement parts

NOT once in a thousand times will this happen—but, with Cleveland you can order a new gear which will run correctly with an old worm that's still good after working perhaps 20 years or more. That's the kind of service you can expect from Cleveland—and here's why!

At the Cleveland factory are stored over 1,300 *different* worm gear hobs and master worms. This enables us to duplicate with precision any gear (or worm) that has *ever* left our plant. This means that if a gear *alone* should ever need replacement, you do not have to buy a complete new drive. Instead, just give us the particulars on your Cleveland speed reducer, no matter how old—10, 20, 30 or even 40 years! In short order, we'll have a new gear ready for you—one that will run perfectly with the older worm.

By supplying parts on this basis, Cleveland may be able to save you the cost of a *complete* new drive or the extra expense of special tooling. Isn't this the replacement protection you want when you buy worm gear drives? The Cleveland Worm and Gear Company, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

CLEVELAND
Worm Gear
Speed Reducers

New Cutler-Hammer 9101 Switch joins a distinguished family of Small Motor Control Champions

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●

FAMOUS C-H EUTECTIC OVERLOAD PROTECTION FLIP TO "OFF" RESETS

●

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